

NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



THESIS

**ESTIMATING ACTIVE ARMY AND
ARMY RESERVE COMPETITION
FOR HIGH QUALITY RECRUITS
WITH OTHER MILITARY SERVICES**

by

James M. Demyanovich

September, 1995

Thesis Advisor:

Toke Jayachandran

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FOR HIGH QUALITY RECRUITS WITH OTHER MILITARY
SERVICES**

James M. Demyanovich
Captain, United States Army
B.S., Pennsylvania State University, 1984

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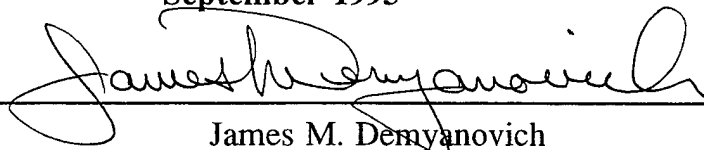
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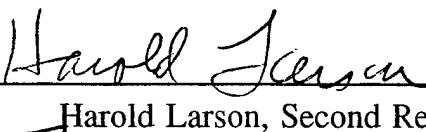
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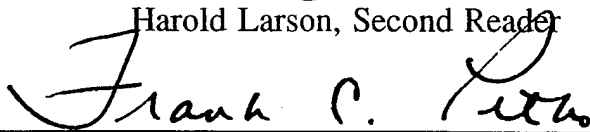
Author:


James M. Demyanovich

Approved by:


Toke Jayachandran, Thesis Advisor


Harold Larson, Second Reader


Frank C. Petho, Acting Chairman
Department of Operations Research

ABSTRACT

The analysis concentrated primarily on the recruiting of high quality recruits for the period FY 1987 through 2d Quarter FY 1995. The U.S. Military Entrance Processing Command (USMEPCOM) data used contained sufficiently accurate figures on Active Army and Army Reserve accessions. The data appears to represent a relatively accurate historical record of the number of non prior service enlistments into the Military Services, with the exception of the Air National Guard and Air Force Reserve.

The USMEPCOM data is used to analyze the relationship between Active Army and Army Reserve accessions and the other Active Services and Reserves over three time periods; before, during and after Desert Shield/Desert Storm. Competition for high quality recruits is modelled and the distribution of those high quality recruits among the Military Services is estimated for geographic area equivalents to USAREC Brigades. The results provide a means for USAREC to gain insights into the most recent competition experienced by its Active Army and Army Reserve recruiting efforts with other Military Services.

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LIST OF SYMBOLS, ACRONYMS AND/OR ABBREVIATIONS

ARNG	Army National Guard
USA	U.S. Army, Active Duty
USAF	U.S. Air Force, Active Duty
USAR	U.S. Army Reserve
USMC	U.S. Marine Corps, Active Duty
USMCR	U.S. Marine Corps Reserve
USMEPCOM	U.S. Military Entrance Processing Command
USN	U.S. Navy, Active Duty
USNR	U.S. Naval Reserve
USAR	U.S. Army Reserve
USAREC	U.S. Army Recruiting Command

EXECUTIVE SUMMARY

U.S. Army Recruiting Command (USAREC), Fort Knox, Kentucky is the primary Army agency with responsibility for organizing, planning and executing Active Army (USA) and Army Reserve (USAR) enlisted recruiting efforts. It seeks to recruit the highest quality soldiers even through an era of force downsizing. This effort is paramount to maintaining quality manning of USA and USAR units. This research is part of an ongoing effort by USAREC to identify competition with the other U.S. Military Services in its enlisted personnel recruiting efforts. Shrinking recruiting budgets for the Army require the best possible understanding of the competition for enlisted recruits. This research produced analysis at the USAREC brigade level. For purposes of this thesis, analysis is focused on two age groups; those 21 years old and younger and over 21 years old.

This thesis assesses recruiting competition for "high quality" non-prior service (NPS) recruits to fill USA and USAR enlisted personnel requirements. NPS persons are those that have not had previous U.S. Military experience. Recruiting data is categorized by a "quality" range of Armed Forces Qualification Test (AFQT) Scores. The AFQT is a series of aptitude tests taken by recruits in their military processing period prior to actual enlistment. USAREC studies show that higher AFQT scoring recruits tend to meet obligations of enlistment contracts and have less frequent early separations from the Service than do low AFQT scorers. AFQT scorers who are termed "high quality" throughout this research represent the category of recruits who scored in the top fiftieth percentile of the AFQT.

Analysis performed concentrated exclusively on recruiting of high quality persons for the period FY 1987 through 2d Quarter FY 1995. The time period was parced into three,

roughly equivalent time periods; before, during and after Desert Shield/Desert Storm. The U.S. Military Entrance Processing Command (USMEPCOM) data file supplied recruiting and recruiter data. The database used for analysis contained sufficiently accurate figures on Active Army and Army Reserve accessions to allow reasonable belief that the data represented a roughly accurate historical record of enlisted, non-prior service accessions for most of the Active and Reserve Services. The Air National Guard and Air Force Reserve data appeared too sparse to be of use in analysis.

The USMEPCOM accession data allowed for an analysis of the relationship between Active Army and Army Reserve accessions and the other Active Services and their Reserves. Competition for high quality recruits is modelled using regression analysis. A market share analysis for the Active and Reserve Military Services is also conducted to depict the changing distribution of high quality recruits among the Services.

Analysis of the recruiting data indicated that competition for high quality recruits among the Services exists. In nearly all cases, competition for non-prior service recruits is seen within the younger age group; accessions for those 21 years and younger. There was no significant evidence of competition in the 22 year old and older age group. Significant findings were:

- Competition for high quality recruits appears to be limited to the 22 years old and younger age group. Younger people may be more easily swayed by the various Services' recruiting efforts than are older people.
- Active Army competition for Active Service high quality recruits is occurring in the 5th and 6th Brigades with the Air Force. Not surprisingly, there is a large concentration of Air Force Bases in those brigades in the Southwest and Western United States. The mere presence that brings familiarity with the Air Force may be a recruiting asset for that Service.

- Army Reserve competition for Reserve high quality recruits is occurring the 5th and 6th Brigades with the Marine Corps Reserve. Army recruiters interviewed in the 6th Brigade reported that the Marine Corps is seemingly very attractive to a large segment of the Hispanic population. The Southwest and Western United States contains a large portion of the Hispanic population. The Army Reserve competition with the Marine Corps Reserve for high quality recruits may be a manifestation of a cultural preference for a more "machismo" Service.
- Active Army competition for high quality recruits with the Reserves is primarily with the Army Reserve almost throughout the United States. Competition is not evidenced with the Army National Guard or the other Reserves, with the exception of the Marine Corps Reserve in the 6th Brigade. The Army Reserve may provide an opportunity for recruits to "try out" the Army through joining the Army Reserves.
- Market share of Active Army and Army Reserve high quality recruits is generally decreasing. The Marine Corps and Marine Corps Reserve market share is generally increasing. These changes in market share of high quality recruits possibly stems from a disproportionate downsizing of the Marine Corps less than the other Services over the past several years.

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I. INTRODUCTION

A. GENERAL

The Department of the Army seeks to recruit the highest quality soldiers even through an era of force downsizing. This effort is paramount to maintaining quality manning of Active Army (USA) and Army Reserve (USAR) units. U.S. Army Recruiting Command (USAREC), Fort Knox, Kentucky is the primary Army agency with responsibility for organizing, planning and executing USA and USAR enlisted recruiting efforts. This research is part of an ongoing effort by USAREC to identify competition with the other U.S. Military Services (Figure 1) in its enlisted personnel recruiting efforts. Shrinking recruiting budgets for the Army require the best possible understanding of the competition for enlisted recruits. Most useful to USAREC is assessing competition for the most sought after recruits; by age, Service experience and "quality," at a level of USAREC's organizational structure.

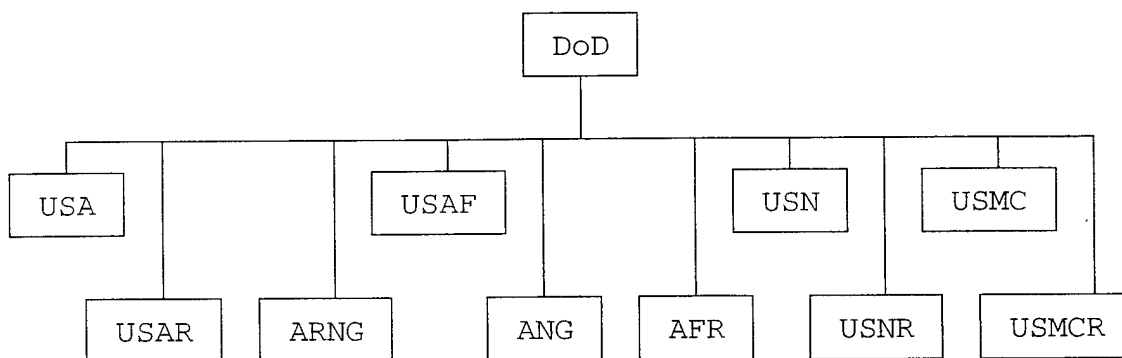


Figure 1. Composition of Active Services and Their Reserves

1. Recruiting Framework

The age ranges considered the most desirable by the active Military and Reserves varies. For instance, USA recruiters consider their "prime (recruiting) market" to be

males from 17-21 years of age. In contrast, the USAR recruiters consider their "prime (recruiting) market" to be males from 17-29 years of age[Ref. 1]. This apparent overlap in the definitional difference between which populations are "prime market" probably extends to the other active Services and the other Reserves. For purposes of this thesis, analysis will focus on two age groups; those 21 years old and younger and over 21 years old.

USAREC's focus on recruiting competition is primarily that for non-prior service (NPS) persons to fill USA and USAR enlisted personnel requirements. NPS persons are those that have not had previous U.S. Military experience. Prior service (PS) persons have U.S. Military experience.

USAREC desires the highest "quality" recruit possible in every accession gained. Previous USAREC studies show that recruits who score well on the Armed Forces Qualification Tests (AFQT) have lower loss rates through broken enlistment contracts or early separation from the Army than do lower AFQT scorers. The AFQT is a series of aptitude tests given to a recruit prior to actual enlistment. This thesis considers "high quality" recruits those who score at or above the AFQT's top fiftieth percentile.

2. Modelling Recruiting Competition

This research investigates regional inter-Service competition for high-quality recruits. Competition is evidenced by the analysis of multi-Service historical recruiting data using least-squares regression models. An estimation of the Active and Reserve Service shares of high quality recruits is also calculated. The most important task in performing any data analysis on recruiting is to obtain a single, coherent source of recruiting data. A single source provides a common basis on which categories of recruits can be aggregated and analysis performed. The need for a single source of recruiting data for all the U.S. Military Services

required a search and examination of the available Department of Defense (DoD) databases.

Recruiting data is generally held separately by each of the Military Services. For example, USAREC maintains recruiting data for the USA and USAR only. It does not hold recruiting data on the Army National Guard (ARNG) though the ARNG is part of the Total Army. Further indication of a lack of a coherent data source occurs even within USAREC. USAREC's USA and USAR recruiting data is held separately in differently structured databases.

Of prime interest in selecting a data source is the desirability to use a single, coherent source. This source would ideally provide recruiting information on all Military Services and uniformly define recruit information throughout. The most useful level of detail for this research would provide aggregations of recruits, by level of education, age, gender and performance on the AFQT. Several of the previous studies on recruiting used data from the Defense Data Manpower Center (DMDC); in particular, the U.S. Military Entrance Processing Command (USMEPCOM) database.

B. BACKGROUND

Recruiting efforts by the USA and USAR are closely coordinated since both fall under the single USAREC Headquarters. It contains, however two, separate interests and organizations: USA Recruiting Operations and Reserve Recruiting Operations. USAREC provides recruiters to recruiting stations for both the USA and USAR. These stations are normally manned by recruiters from both the USA and USAR. Though closely affiliated within the same command structure, recruiters generally recruit for their own portion of the Army.

The decision of a person to consider the Military as a full-time career in an Active Service or a part-time job in

the Reserves is the first step in that person becoming a Military accession. The population of those who have decided to enlist in the Military is the focus of this study.

The USA and USAR share a recruiting structure that breaks the United States into five regional areas called Brigades (Figure 2). Recruiting in each of these areas is the responsibility of the Brigade. Brigades are broken into several smaller echelons called battalions. Battalions in turn are further broken into companies with each company responsible for the lowest echelon: the recruiting stations. Each recruiting station is staffed with a handful of recruiters.

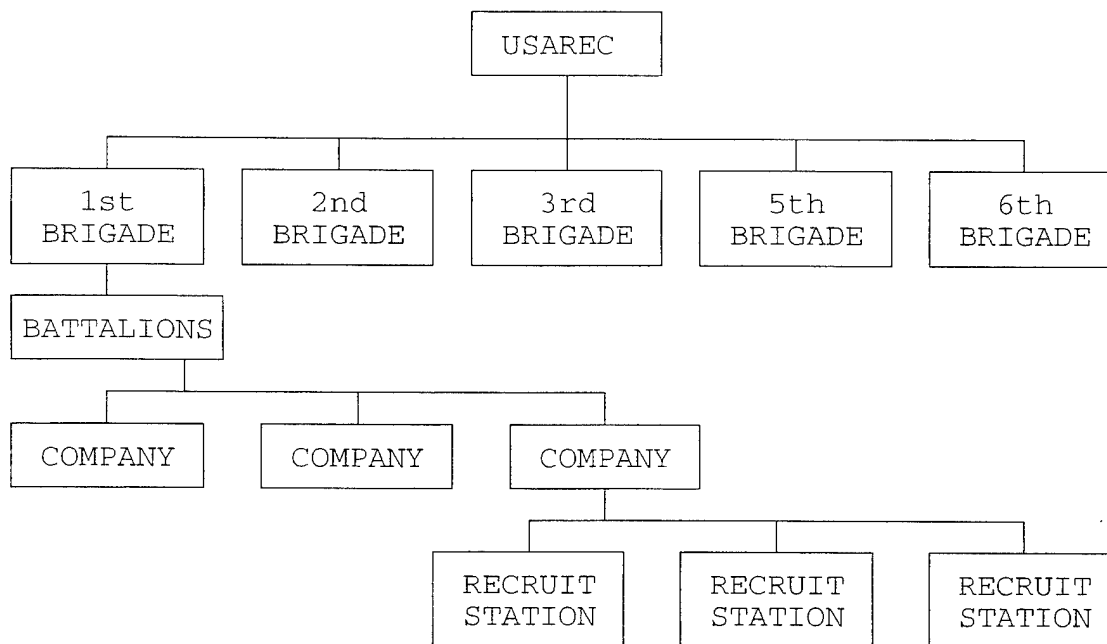


Figure 2. U.S. Army Recruiting Command Structure

Geographic areas designated by zip codes identify territories within which each level recruits. This preserves, in concept, the ability of recruiters to systematically recruit an entire, limited geographic area without direct

competition from another recruiter who is based at a distant recruiting station. Research into processes of other Services revealed a similar manner of establishing recruiting regions generally designated by zip code.

II. LITERATURE REVIEW AND RELEVANT FACTORS

A. LITERATURE REVIEW

A selected review of past research on recruiting did not identify any studies whose primary purpose was measuring competition between Military Services for recruits. Most studies attempt to identify independent variables that provide estimates of the size of the Military eligible population in a geographic area. Models generated from these variables are generally "supply" models. These include studies from both the recruiter and recruiting organization standpoint. They also consider the population's socio-economic factors that make for successful Military recruiting of young people. These studies cover a wide variety of issues, and even provide an indication of competitive effects between the USAR, ARNG and USA recruiting efforts.

Previous efforts estimating supply models often indirectly attempted to determine recruiting competition. Competition was generally evidenced as a single variable in an overall larger model. The modelling levels selected by past researchers considered various geographic areas normally centered on some recruiting element of the Military Services.

1. Supply Estimate Based on MEPS Areas

In his 1985 RAND study of Non-Prior Service Reserve Enlistments[Ref. 2], Hong W. Tan sought to estimate the supply of non-prior service USAR personnel. The focus of his efforts was on three of the Reserve components: USAR, ARNG, and the Naval Reserve (USNR). The competitive effects between and among both the Reserve and Active components were investigated.

Tan selected the Military Entrance Processing Station (MEPS) for defining his local markets and used the DoD Reserve Components Common Personnel Data System (RCCPDS) for data. He developed alternative supply models for each of two groups; high quality male and combined high quality male and female recruits. He found that recruiters have a strong, positive effect on USAR and ARNG components. The recruiter effects were similar to those found by previous USA supply estimates.

In analyzing intercomponent effects, Tan found that there is "little evidence of deleterious intercomponent competition (with the exception of Naval Reserve) on reserve recruiting, either from the active Services or from other reserve components." He summarized the relationship between the USAR and ARNG recruiting efforts to be complementary; increasing USAR enlistments occurred with increasing ARNG enlistments.

2. Supply Estimate Based on USAREC Recruiting Battalions

Daula and Smith's [Ref. 3] study of high quality Army enlistments analyzed recruiting at the USAREC battalion level. The authors segregated data into two sets. One set considered only units that met or exceeded recruiting quotas. The other set contained data from only those units that failed to meet their quotas. As would be expected, analysis showed that the quotas had an impact on recruitments. Competition for recruits was evidenced in the author's assertion "that increases in high quality enlistments in the Navy, Air Force, and Marines reduced the supply of enlistments for the Army." Daula and Smith estimated a reduced Army enlistment supply by one person for every two to three additional youths recruited by other Services. Hence, recruiting competition from other Services was seen as a major impactor on enlistment supply for the Army.

3. Supply Estimate Based on USAR Units

Mehay's 1989 report on USAR supply models [Ref. 4] focused on the Army Reserve Centers and their local geographic (30 mile radius) areas. He addressed both PS and NPS enlistments and used socio-economic factors such as unemployment rate, population migration patterns and the Military-civilian wage ratio. He formulated two models attempting to measure other Services' recruiting effects: one accounting for ARNG recruiting and the other accounting for all other Reserve components' recruiting.

Mehay found that USAR recruiter goals (based on requirements of local reserve units) has a positive, significant effect on recruiting. This finding closely agrees with Goldberg's study (1987)[Ref. 5]. In considering competition between USA and USAR recruiters, Mehay postulated that USA recruiters are "complementary with, rather than substituting for USAR recruiters." The ARNG competition with the USAR was determined to be significant for both PS and NPS enlistments. Mehay concluded that veterans tend to regard the USAR and ARNG as closer substitutes than do NPS persons.

4. Recruit Attitude Study

Thomas and Gorman[Ref. 6] analyzed self reported motivations for recruits to join the USAR. Their source of data was a 1987 survey given to over eleven thousand USAR recruits that attempted to identify motivations for joining the USAR.

Thomas and Gorman found that over eighty percent of all male recruits were out of high school under 36 months. This was speculated to mean that many people view the USAR as a method of "trying out" Service life as a potential first step in considering transferring to the USA. In fact, "a quarter of the men and a fifth of the women joining the USAR reported that they had plans to transfer from the USAR to the Active Army."

B. KEY FACTORS AFFECTING RECRUITING

All of the previous studies reviewed demonstrated that the number of recruiters has a great impact on the supply of recruits. The supply estimates attempt to estimate the proportion of the population that may enlist in the Military. These supply estimates, therefore, look at entire populations, using a variety of demographic factors such as military/civilian pay ratios and unemployment rates to estimate the number of people that: 1) desire joining the Military, and 2) may consider the Military as a career choice.

This thesis, in contrast, strives to assess competition between Service components based on the number of recruits actually acquired by the Services. The time period for analysis is 1987-1995. This provides the ability to examine recruiting competition before, during and after Desert Shield/Desert Storm. Isolating the Desert Shield/Desert Storm era for analysis may identify transient effects in inter-Service recruiting competition that occurred during the War. It also allows for estimating the most recent recruiting competition.

III. METHODOLOGY AND ANALYSIS

A. DATA SOURCES

1. Data Sources Investigated

USAREC Headquarters possesses recruiting information for the USA and USAR. Both USA and USAR accessions are recorded in separate, unique MINIMASTER databases that are not commonly structured. USAREC's ATAS database is used to align numbers of recruiters in USAREC recruiting areas. However, ATAS does not maintain historical data on the numbers and locations of recruiters.

Many previous studies used Defense Manpower Data Center (DMDC) data[Ref. 7]. DMDC's resources examined as potential data sources were the Reserve Components Common Personnel Data System (RCCPDS) and the U.S. Military Entrance Processing Command (USMEPCOM) Examination and Accession file. DMDC's RCCPDS database provides a standardized and centralized record of all past and present Reserve Component members since 1975. The USMEPCOM file held by DMDC contains records on all individuals processed through Military Entrance Processing Stations (MEPS) since 1970. This USMEPCOM database captures all personal, medical and administrative information for individuals processing at MEPS stations across the United States. The file includes AFQT scores, branch of Service, dates of accession, recruiter identifiers and enlistment categories. Both Active and Reserve Military entrants are processed through MEPS.

The final database examined was the USMEPCOM Examination and Accession file actually maintained by USMEPCOM. It is essentially the same database held by DMDC but is the original generator of the data. USMEPCOM is the DoD organization responsible for command and control of all MEPS.

2. Required Resolution of Data for Analysis

The lowest level competition that could be potentially examined is at the recruiting station/recruiter level. This level was judged too low to determine inter-Service competition. Consideration was given to using state, regional and USAREC organizational level. A broad regional approach was considered the most desirable.

Personal interviews with recruiters and reviews of the literature on current U.S. Military recruiting netted valuable and useful insights into the recruiting process. The Services' use local MEPS to process practically all of their NPS recruits. The MEP stations document the tasks they perform as transactions, to include accessions, in their data files. MEP stations are a common step in the Services' recruiting efforts. Therefore, the USMEPCOM's data file of all Military entrants' transactions was selected as the data source for modelling inter-Service competition. The 60 to 70 MEPS provide recruit processing to the entire United States.

B. ANALYSIS PLAN FOR USMEPCOM DATA

1. USMEPCOM Database Overview and Shortcomings

USMEPCOM provided accession data for each of its operational MEPS from FY 1987 to 2nd Quarter FY 1995. During that period, several MEPS actually closed; data for the closed MEPS is included through the time they actually closed.

The USMEPCOM database contains accession data for most of the Military Services. A check was performed to investigate the amount of missing data for each of the Services. It was found that the database had very few entries for the Air National Guard, U.S. Air Force Reserve and prior service accessions for non-Army Services. Therefore, Air National Guard and Air Force Reserve data is excluded from this study. Prior service analysis is limited to the USA, USAR and ARNG since the data appeared to be consistently present.

2. Data Accuracy Investigation

As a check of the accuracy of the USMEPCOM data, USA and USAR recruit data was aggregated as shown in Table 1 over the MEPS in California for FY 1994. This data was compared to the numbers aggregated from USAREC's MINIMASTER data files for battalions in California for the same time period.

California Military Entrance Processing Stations	California Region USAREC Battalions
Los Angeles San Diego Oakland Fresno	Los Angeles Santa Ana Sacramento

Table 1. California MEPS that Approximate Aggregated California USAREC Battalion Areas

The numbers of NPS accessions reported by USAREC's four battalions appeared roughly the same as that reported by USMEPCOM's three MEPS as shown in Table 2. USAR total accessions which counts both PS and NPS accessions, did not match well.

Data Source	Active Army Total Accessions	Active Army NPS Accessions	USAR Total Accessions	USAR NPS Accessions
USMEPCOM	5859	5433	1444	1186
USAREC	6176	5583	2723	1245

Table 2. USAREC - USMEPCOM FY 94 California Data Comparison

C. ANALYSIS PLAN

Recruiting data available through the USMEPCOM has counts of the number of high quality accessions recruited in MEPS areas by the Services. Also available is an approximate count of the number of recruiters that produced these accessions. A model of competition for a particular Service would use its accessions as a dependent variable, adjust for the effect of

its own recruiters and determine the relationship of its accessions to the accessions of "competing" Services. A simple, linear relationship between the model elements is assumed to exist. If the regression coefficient for another Services' accessions is negative and statistically significant, this would be treated as an indicator of competition. The model used for this analysis is estimated using ordinary least squares (OLS) regression.

The OLS regression model used in its general form assumes that:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \epsilon \quad (3.1)$$

where $\beta_0, \beta_1, \dots, \beta_k$ are the regression coefficients. The Y term is the number of accessions into the Service of interest. The independent/explanatory variables $X_1, X_2, X_3, \dots, X_k$ represent the numbers of recruiters and accessions into the competing Services. The ϵ term is the error due to a lack of a perfect model fit of all data points.

Summary statistics for accessions into each of the Services can depict the changing distribution of accessions over time. Proportional analysis by Active Services and Reserves provides "propensity estimates" for high quality persons entering the Services. "Propensity estimates" are considered to be the fraction of high quality recruits that selected a particular Service among the Active or Reserve Services.

A two-phased approach is used to investigate competition for high quality recruits; a demonstration phase using California data for the USA and USAR and a full analysis for the whole United States using all MEPS data for the Services. The demonstration is performed on the USA and USAR California data to verify the techniques to be applied to the full

analysis. Full analysis is performed to model competition between the USA, USAR and other Services and Reserves.

1. Analysis Demonstration Using California Data

An ordinary least squares (OLS) regression model was generated using quarterly MEPS data for each of the four, California MEP Stations. MEPS data used included all data from 1987-1995. For each of the models, the number of USA accessions was the dependent variable. The number of USA recruiters, the number of USAR recruiters and the number of USAR accessions were used as independent variables. As an example of the results of the OLS regression, the model fitted by OLS for the San Diego MEPS has the form of Equation 3.2 with specific values listed in Figure 3.

$$\hat{Y} = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \hat{\beta}_2 X_2 + \hat{\beta}_3 X_3 \quad (3.2)$$

where:

\hat{Y} is the number of USA accessions

$\hat{\beta}_0 = -9.130$

$\hat{\beta}_1 = +1.44$

X_1 is the number of USA recruiters

$\hat{\beta}_2 = -1.53$

X_2 is the number of USAR recruiters

$\hat{\beta}_3 = -1.83$

X_3 is the number of USAR accessions.

Figure 3. San Diego MEPS OLS Model and Coefficient Estimates

The four California MEPS OLS regressions are presented in Table 3. Regression coefficients with p-values of 0.100 and less are considered to be significant. To illustrate the analysis, the San Diego MEPS regression coefficient for the USA recruiters is positive and significant indicating that the presence of recruiters has a positive impact on recruiting. The USAR recruiters have a negative coefficient but the coefficient is not significant at the p=0.100 level. Hence,

in this case the USAR recruiter effect is indeterminate. The positive and significant coefficient for USAR accessions does not reflect USA accessions competing for accessions with the USAR. The R-squared value of the San Diego regression model of 0.849 reflects a strong linear relationship between the dependent variable predicted by the independent variables. A R-squared value of up to 1.0 is possible.

Independent Variable	Fresno MEPS	Los Angeles MEPS	Oakland MEPS	San Diego MEPS
Constant	-28.16 (p=0.215)	-184.34 (p=0.060)	-167.12 (p=0.003)	-9.13 (p=0.630)
USA Recruiters	2.48 (p=0.000)	1.83 (p=0.000)	2.12 (p=0.000)	1.44 (p=0.000)
USAR Recruiters	-1.31 (p=0.360)	2.52 (p=0.080)	1.73 (p=0.040)	-1.53 (p=0.145)
USAR Accessions	-0.40 (p=0.600)	-2.21 (p=0.080)	-1.26 (p=0.010)	1.83 (p=0.050)
R-Squared	0.546	0.709	0.748	0.849

TABLE 3. NPS High Quality Male Accessions
Under Age 22 OLS Estimates

The results in Table 3 reconfirm what has been observed in earlier studies, i.e., the number of USA recruiters is an important determinant of the number of USA enlistments. The estimated USA recruiter coefficients for all the California models are highly significant; less than p=0.001. The coefficients for the number of USAR recruiters was significant in only half the California MEPS regression models. Significant USAR accessions coefficients were primarily negative reflecting competition for accessions with the USA. Further study of the California MEPS models was performed. Models that excluded USAR recruiters tended to increase the levels of the significance of the other independent variable coefficients; especially the USAR accessions coefficients.

The observed proportions of enlistees into USA and USAR for the California MEPS are in Tables 4 and 5. The reported proportions are ratios of those entering either the USA or

USAR to the total number of high quality recruits that enlisted into the USA and USAR combined. Accessions into the Army National Guard are not included in these computations. Table 4 reflects the total numbers and proportions of all accessions into the USA and USAR. Table 4 data includes both male and female high quality accessions. Table 5 reflects the proportions of male high quality accessions under age 22. Between 75 and 86 percent of the recruits choose USA for this time period considering both categories over all California MEPS.

MEPS	USA Accessions	Proportion USA	USAR Accessions	Proportion USAR	TOTAL
San Diego	6954	0.830	1417	0.169	8371
Fresno	4350	0.824	925	0.175	5275
Los Angeles	18140	0.831	3670	0.168	21810
Oakland	13314	0.753	4348	0.246	17662
Total	42758	0.805	10360	0.195	

TABLE 4. Proportions of California NPS High Quality Accessions

MEPS	USA Accessions	Proportion USA	USAR Accessions	Proportion USAR	TOTAL
San Diego	4464	0.854	758	0.145	5222
Fresno	3065	0.844	563	0.155	3628
Los Angeles	12115	0.852	2099	0.147	14214
Oakland	8913	0.771	2647	0.228	11560
Total	28557	0.825	6067	0.175	

TABLE 5. Proportions of California NPS High Quality Male Accessions under Age 22

The statistical significance of California MEPS regression coefficients and model R-squared values indicated that the use of OLS regression could reflect competition

between the Services using recruiting data. The recruiting data also provides the opportunity to perform a "market share" analysis for the Services to identify and report the changing distribution of high quality accessions, among Services, if any.

2. Full Analysis - USAREC Brigade Level

The USAREC brigade level was chosen for the basis of modelling competition for recruits. Models of the competition for high quality recruits used a data set from all MEPS that includes the Active and Reserve Services accessions as well as USA and USAR recruiters. USAREC Brigade regions are approximated by aggregations over the MEPS operating within brigade regions as shown in Figure 4 [Ref. 8]. The brigade boundaries selected were those most currently designated by USAREC and are as of 1995. USAREC restructured its recruiting regions several times since 1987. Fixing the current USAREC brigade boundaries and modelling historical competition and reporting market shares is relevant to USAREC's near term recruiting strategy and planning. Specific MEPS and brigade associations are listed in Table 6. Hence, references to "Brigade regions" implies use of the MEPS data that approximate Brigade accessions throughout this analysis.

Three time frames for analysis were selected in order to isolate and estimate recruiting competition before, during and after Desert Storm/Desert Shield. The three time frames for analysis, termed "eras", were: 1987 to 1989, 1990 to 1992 and 1993 through the second fiscal quarter 1995. Isolating Desert Storm/Desert Shield is pertinent due to the USAREC reported anomalous increase in accessions into the USA and USAR during the War.

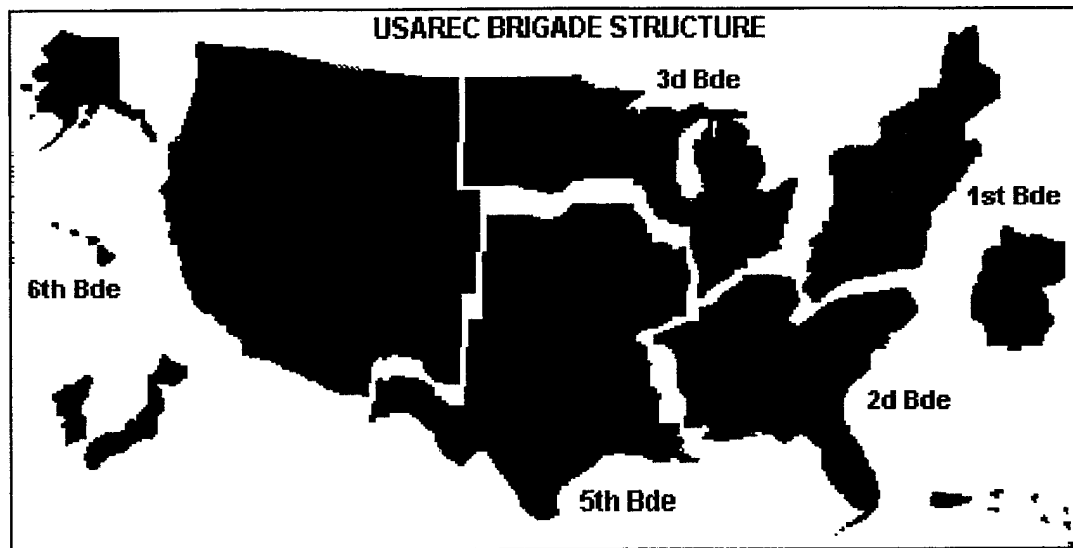


Figure 4. USAREC FY 1995 Brigades

USAREC Brigade	Geographic Brigade Region	Corresponding Servicing USMEPCOM MEP Stations
1st Brigade	Northeast U.S., Germany	Albany, Baltimore, Boston New York, Harrisburg Manchester, Newark New Haven, Philadelphia Pittsburgh, Portland, ME Springfield, Syracuse Wilkes-Barre, Beckley Richmond
2nd Brigade	Southeast U.S., Puerto Rico, Virgin Islands	Tampa, Atlanta, Charlotte Miami, Ft. Jackson Jacksonville, Knoxville Louisville, Montgomery Nashville, San Juan Raleigh, Jackson, Memphis
3d BRIGADE	Northcentral U.S.	Lansing, Chicago, Cincinnati Cleveland, Columbus, Detroit Fargo, Indianapolis, Milwaukee, Minneapolis Sioux Falls
5th BRIGADE	Southcentral U.S.,	Amarillo, Dallas, El Paso Houston, Kansas City Little Rock, New Orleans Oklahoma City, San Antonio Shreveport, Des Moines, Omaha St Louis
6th BRIGADE	Western U.S., Alaska, Hawaii, Guam, Japan, South Korea	Albuquerque, Denver San Diego, Boise, Butte Fresno, Honolulu, Los Angeles Oakland, Phoenix, Portland, OR Salt Lake City, Seattle Spokane, Anchorage, Guam

Table 6. MEPS to USAREC Brigade Structure

Categories of accessions analyzed are aggregated by gender, age and quality as shown in Table 7. OLS is used to model competition within the brigade regions for each of the Table 7 recruit categories using the Services in Table 8. USA and USAR accessions serve as dependent variables with the numbers of recruiters and other Services accessions serving as predictor variables. Table 9 shows the "market share" or proportional analysis categories used to compare the distributions of recruits among the Active Services and Reserves. Market shares of accessions for Active and Reserve Service NPS recruits as well as PS recruits for the USAR and ARNG are calculated.

Categories of Recruits for Analysis
High Quality NPS Males 21 years old and younger
High Quality NPS Males 22 years old and older
High Quality NPS Males and Females 21 years old and younger
High Quality NPS Males and Females 22 years old and older
High Quality NPS Males and Females of all Ages
High Quality PS Males 22 years old and older
High Quality PS Males and Females 22 years old and older

Table 7. Accession Categories USAREC Brigade Level Analysis

Response	Predictors	
	Recruiters	Accessions
USA Accessions	USA	USN USAF USMC
USA Accessions	USA	USAR ARNG USNR USMCR
USAR Accessions	USAR	ARNG USNR USMCR

Table 8. NPS Least Squares Predictors and Response Variables

Type of Accessions	Services for Comparisons
Non-prior Service	USA USAF USN USMC
Non-prior Service	USAR ARNG USNR USMCR
Prior Service	USAR ARNG

Table 9. Market Share Analysis Variables

D. DATA MANIPULATION AND CODING

MEPS provide a good ability to investigate NPS accessions into the Military and, to a lesser degree, PS accessions. The USAREC structure of recruiting Brigades form large regions that encompass areas from which recruiting by most of the Services occur. The data provided by USMEPCOM was coded by Service, MEPS identification number and fiscal quarter. Inclusion of a MEPS station identifier allowed for further aggregating data into regions approximately equivalent to USAREC Brigade regions for each of the three eras.

E. DATA SUMMARIZATION AND ANALYSIS RESULTS

OLS models and market share analysis for USA and Active Services and also the USAR and the Reserves are presented in this section. The categories addressed here are high quality male accessions 21 years old and younger and high quality male accessions over 21 years old. All other analyses, tables and figures are enclosed in Appendix B. Regression coefficients are considered significant at the $p=0.100$ level.

1. Active Army versus Active Services NPS Accessions

a. Males 21 Years Old and Younger

(1) OLS Regression. Regression statistics shown in Table 10 for all eras have R^2 values of at least 60 percent with most values greater than 80 percent. The statistically significant coefficients are positive for all

Services with the exception of the USAF for both 5th and 6th Brigades for the after Desert Storm era.

(2) Market Share Analysis. The share of USA high quality accessions appears to be consistently decreasing for all eras and brigade regions as shown in Figure 5. The USAF and USN accession shares appear nearly constant throughout. The USMC accession share is consistently increasing for all eras and brigade regions.

Brigade/ Data Years	Constant			USA Recruiters			USN Accessions			USAF Accessions			USMC Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	10.998	0.137	+	0.074	0.512	+	0.505	0.000	+	0.966	0.000	+	0.485	0.008	76.1
1BDE/90-92	+	2.329	0.787	+	0.221	0.116	+	0.479	0.000	+	0.711	0.000	+	0.350	0.042	62.8
1BDE/93-95	-	27.386	0.005	+	0.652	0.000	+	0.174	0.032	+	0.586	0.000	+	0.390	0.001	60.5
2BDE/87-89	-	9.057	0.307	+	0.508	0.005	+	0.406	0.000	+	0.326	0.017	+	1.116	0.000	81.9
2BDE/90-92	-	14.918	0.108	+	0.809	0.000	+	0.419	0.000	-	0.239	0.184	+	1.097	0.000	75.3
2BDE/93-95	-	14.695	0.015	+	0.784	0.000	+	0.498	0.000	-	0.182	0.250	+	0.371	0.000	80.5
3BDE/87-89	-	26.220	0.053	-	0.058	0.718	+	0.307	0.051	+	0.800	0.000	+	1.563	0.000	84.9
3BDE/90-92	+	5.181	0.519	+	0.272	0.037	+	0.564	0.000	+	0.251	0.097	+	0.499	0.004	81.4
3BDE/93-95	-	13.262	0.106	+	0.447	0.001	+	0.059	0.561	+	0.397	0.015	+	0.673	0.000	73.0
5BDE/87-89	-	20.665	0.006	+	1.140	0.000	+	0.356	0.003	+	0.404	0.001	+	0.109	0.451	86.6
5BDE/90-92	-	12.077	0.108	+	1.019	0.000	+	0.269	0.004	-	0.060	0.707	+	0.493	0.003	78.7
5BDE/93-95	+	0.110	0.983	+	0.827	0.000	+	0.306	0.001	-	0.308	0.053	+	0.431	0.000	81.1
6BDE/87-89	-	10.805	0.035	+	0.576	0.000	+	0.156	0.152	+	1.101	0.000	+	0.408	0.021	91.8
6BDE/90-92	-	2.025	0.670	+	0.704	0.000	+	0.330	0.000	-	0.088	0.622	+	0.711	0.000	88.2
6BDE/93-95	+	7.967	0.083	+	0.814	0.000	+	0.086	0.376	-	0.359	0.033	+	0.531	0.000	85.0

Table 10. Brigade and Era Models Using Other Active Services' NPS High Quality Male Accessions 21 and Younger to Predict USA Accessions

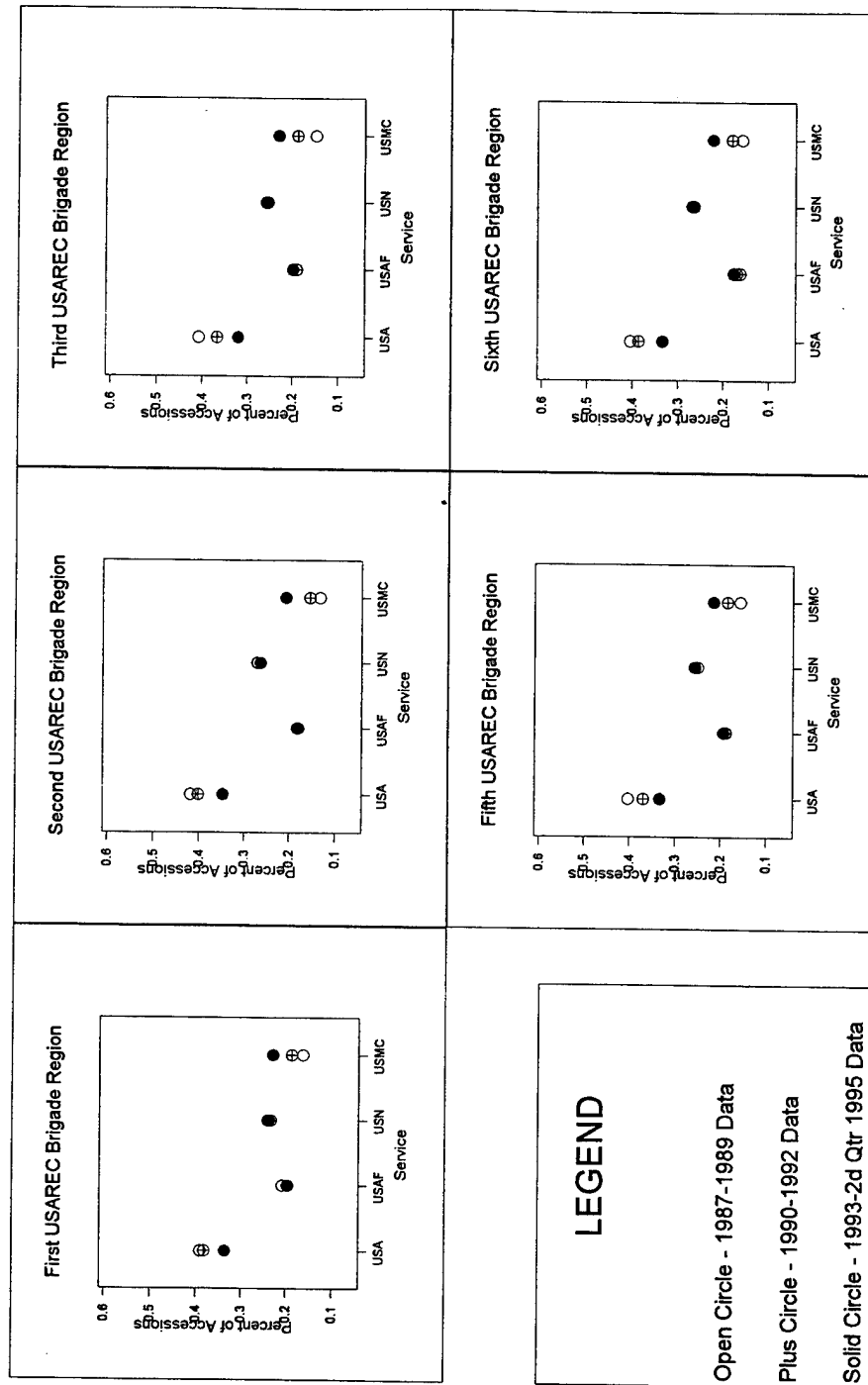


Figure 5. Active Services NPS High Quality Male Accessions by Brigade Region
Market Shares of 21 Year Olds and Younger Entering Active Duty

b. Males 22 Years Old and Older

(1) OLS Regression. Regression statistics in Table 11 for all eras have R^2 values of least 52 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are positive for all Services.

(2) Market Share Analysis. The share of USA high quality accessions appears mostly decreasing but increasing in 6th Brigade and remained nearly constant in 1st Brigade for all eras as shown in Figure 6. Both USAF and USN accession shares are decreasing throughout the eras and brigade regions. The USMC accessions are consistently increasing in brigade regions.

Brigade/ Data Years	Constant			USA Recruiters			USAF Accessions			USN Accessions			USMC Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	6.728	0.009	+	0.112	0.001	+	0.791	0.000	+	0.947	0.000	+	0.163	0.561	75.8
1BDE/90-92	-	9.320	0.001	+	0.327	0.000	+	0.065	0.597	+	0.259	0.054	+	1.584	0.000	69.7
1BDE/93-95	-	9.172	0.005	+	0.442	0.000	+	0.128	0.114	+	0.187	0.260	+	0.747	0.000	71.3
2BDE/87-89	+	0.464	0.157	+	0.068	0.049	+	0.788	0.000	+	0.685	0.000	+	0.172	0.561	63.2
2BDE/90-92	+	0.071	0.984	+	0.295	0.000	+	0.211	0.118	+	0.184	0.230	+	1.019	0.001	55.2
2BDE/93-95	-	7.040	0.02	+	0.252	0.000	+	0.300	0.026	+	0.828	0.000	+	0.494	0.057	67.4
3BDE/87-89	-	9.817	0.017	+	0.062	0.042	+	0.788	0.000	+	0.772	0.001	+	1.425	0.001	78.4
3BDE/90-92	+	3.545	0.219	+	0.183	0.000	-	0.005	0.968	+	0.210	0.193	+	1.325	0.000	64.9
3BDE/93-95	+	6.700	0.023	+	0.216	0.000	+	0.022	0.878	-	0.039	0.842	+	0.693	0.006	52.7
5BDE/87-89	-	7.013	0.125	+	0.035	0.423	+	1.791	0.000	+	0.366	0.028	-	0.352	0.289	72.3
5BDE/90-92	-	3.144	0.316	+	0.307	0.000	+	0.293	0.116	+	0.247	0.161	+	0.656	0.012	65.6
5BDE/93-95	-	2.376	0.324	+	0.213	0.000	+	0.301	0.015	+	0.599	0.000	+	0.748	0.001	77.2
6BDE/87-89	-	5.291	0.017	+	0.122	0.000	+	0.296	0.032	+	1.196	0.000	+	0.810	0.007	86.7
6BDE/90-92	-	3.347	0.136	+	0.358	0.000	-	0.289	0.024	+	0.282	0.140	+	1.063	0.000	80.2
6BDE/93-95	-	2.825	0.161	+	0.345	0.000	-	0.066	0.612	+	0.188	0.350	+	1.055	0.000	86.6

Table 11. Brigade and Era Models Using Other Active Services' NPS High Quality Male Accessions 22 and Older to Predict USA Accessions

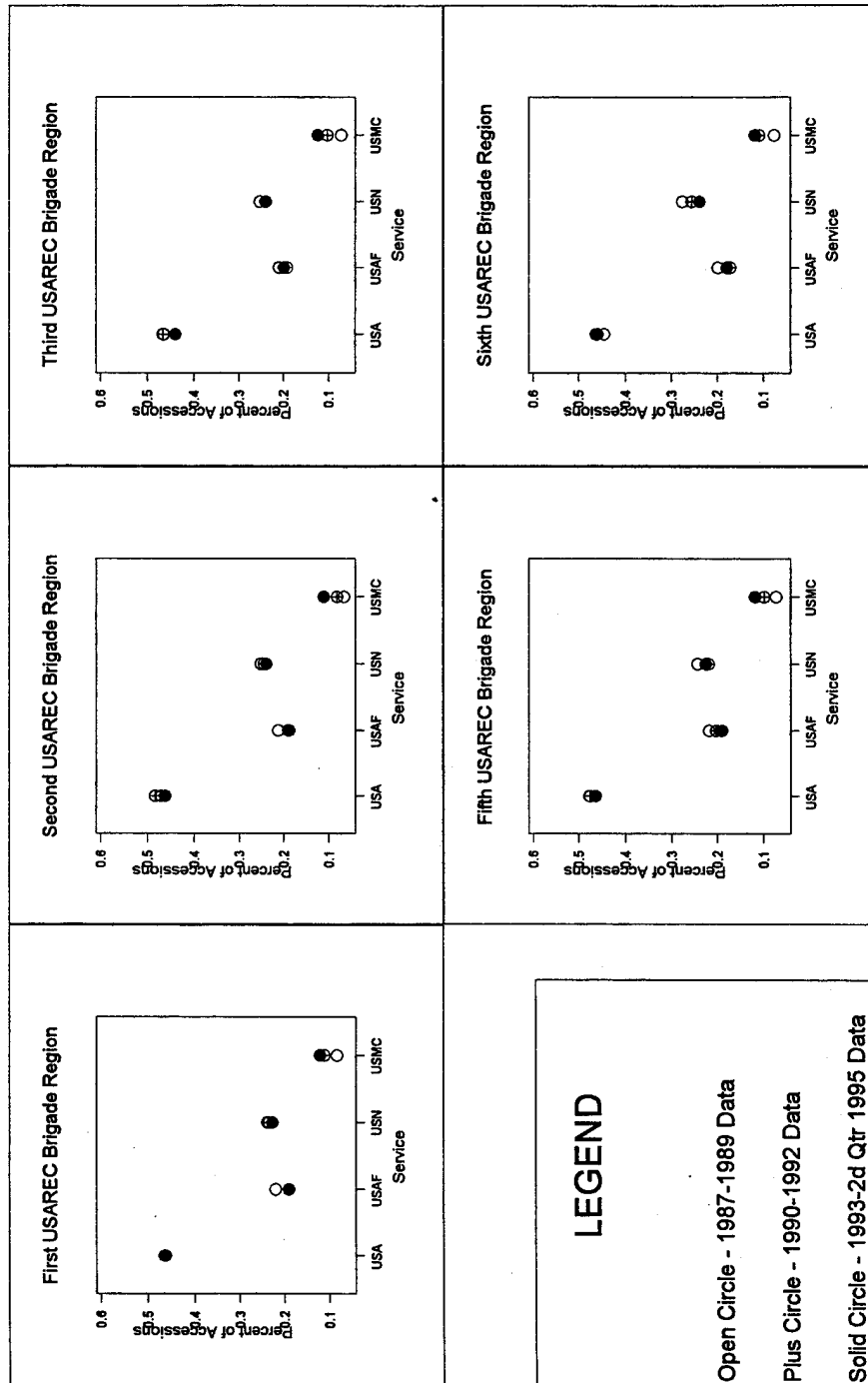


Figure 6. Active Services NPS High Quality Male Accessions by Brigade Region
Market Shares of 22 Year Olds and Older Entering Active Duty

2. USAR versus Other Reserves NPS Accessions

a. Males 21 Years Old and Younger

(1) OLS Regression. Regression statistics in Table 12 for all eras have R^2 values of least 42 percent with most values greater than 65 percent. The statistically significant coefficient values for all eras and brigades are positive for most Services. Significant negative coefficients occur for the USMCR for all eras in the 1st Brigade region and for the USNR in 6th Brigade region for the after Desert Storm era.

(2) Market Share Analysis. The share of USAR high quality accessions appears to be primarily decreasing with the exception of an increasing trend in the 1st Brigade region. The USMCR accessions share is consistently increasing throughout brigade regions as shown in Figure 7. The USNR accessions share is generally decreasing with the exception of a slight increasing trend in the 5th Brigade region. ARNG accessions share is increasing in the 2d and 3d Brigade regions, remaining essentially constant in both 5th and 6th brigade regions and decreasing in the 1st Brigade region.

Brigade/ Data Years	Constant			USAR Recruiters			ARNG Accessions			USNR Accessions			USMCR Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	1.448	0.738	+	0.861	0.000	+	0.469	0.000	+	0.287	0.002	-	0.410	0.001	42.9
1BDE/90-92	+	2.085	0.634	+	1.301	0.000	+	0.280	0.000	+	0.024	0.889	-	0.687	0.000	65.7
1BDE/93-95	-	0.792	0.840	+	1.405	0.000	+	0.265	0.000	+	0.072	0.626	-	0.460	0.013	68.2
2BDE/87-89	-	2.200	0.511	+	0.920	0.000	+	0.274	0.000	+	0.240	0.003	+	0.079	0.436	56.7
2BDE/90-92	-	1.310	0.586	+	0.914	0.000	+	0.265	0.000	+	0.095	0.178	-	0.088	0.344	64.9
2BDE/93-95	+	1.222	0.575	+	0.763	0.000	+	0.222	0.000	-	0.041	0.531	+	0.090	0.364	58.9
3BDE/87-89	+	6.307	.351	+	0.833	0.000	+	0.237	0.001	+	0.100	0.359	+	0.141	0.326	60.0
3BDE/90-92	+	3.553	0.385	+	0.786	0.000	+	0.379	0.000	-	0.001	0.988	-	0.075	0.572	77.5
3BDE/93-95	-	5.291	0.213	+	1.085	0.000	+	0.264	0.000	+	0.220	0.112	-	0.117	0.451	77.1
5BDE/87-89	-	3.751	0.447	+	1.414	0.000	+	0.205	0.000	+	0.031	0.792	-	0.067	0.633	62.5
5BDE/90-92	-	9.496	0.002	+	1.114	0.000	+	0.294	0.000	+	0.286	0.004	-	0.123	0.194	75.2
5BDE/93-95	-	1.645	0.592	+	1.417	0.000	+	0.146	0.001	-	0.118	0.169	-	0.147	0.215	64.7
6BDE/87-89	-	0.722	0.726	+	0.859	0.000	+	0.245	0.000	+	0.049	0.296	+	0.014	0.760	76.6
6BDE/90-92	+	0.107	0.958	+	0.934	0.000	+	0.188	0.000	-	0.016	0.820	-	0.066	0.120	83.3
6BDE/93-95	-	4.265	0.011	+	0.919	0.000	+	0.345	0.000	-	0.109	0.016	+	0.033	0.508	79.9

Table 12. Brigade and Era Models Using Other Active Services' NPS High Quality Male Accessions 21 and Younger to Predict USA Accessions

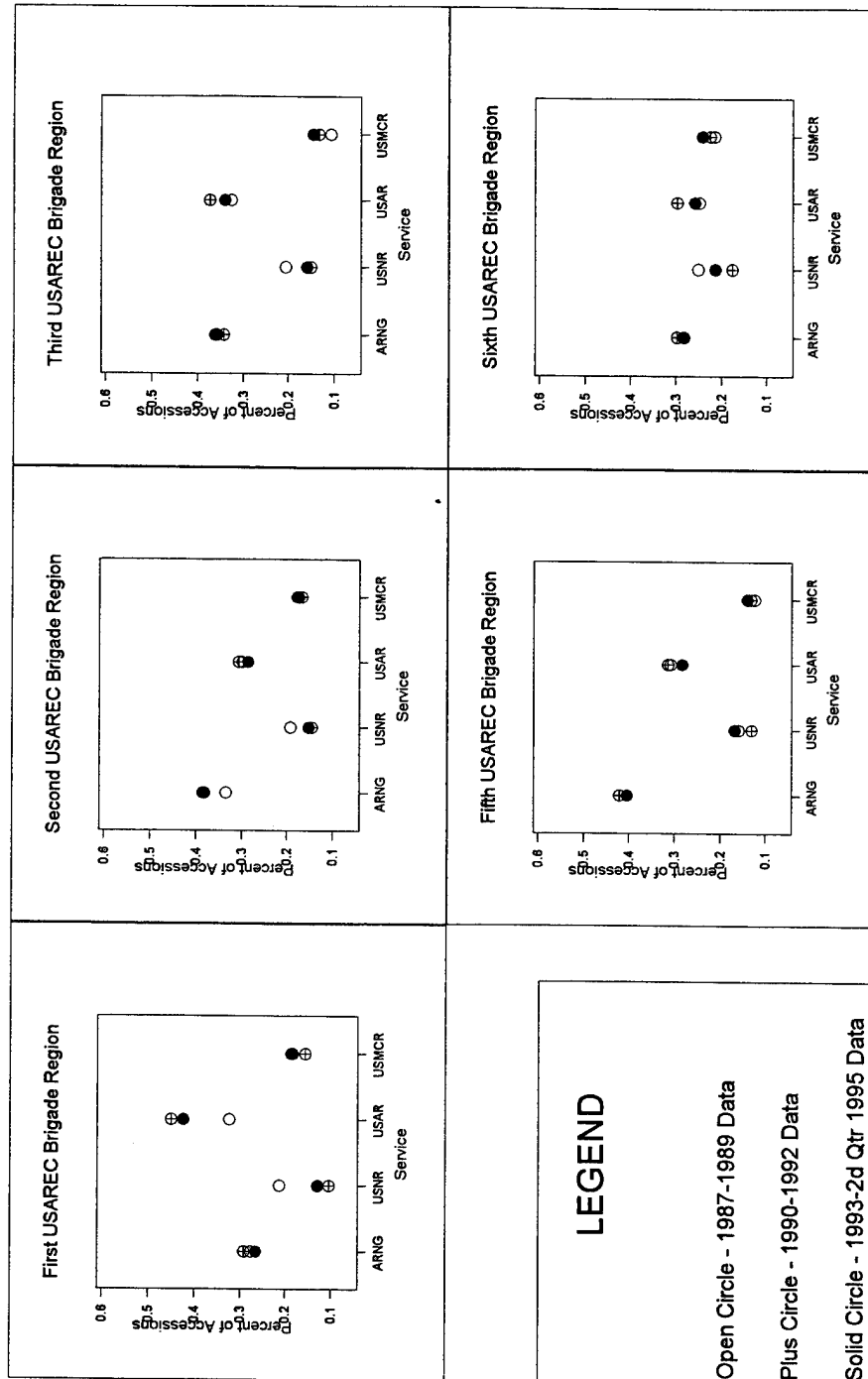


Figure 7. Reserves NPS High Quality Male Accessions by Brigade Region
Market Shares of 21 Year Olds and Younger Entering Reserves

b. Males 22 Years Old and Older

(1) OLS Regression. Regression statistics in Table 13 for all eras have R^2 values as low as 25 percent, but with most values greater than 60 percent. The statistically significant coefficient values for all eras and brigades are positive for all Services.

(2) Market Share Analysis. The share of USAR high quality accessions appears to be increasing in the 1st, 2d and 6th Brigade regions and decreasing in the 3d and 5th Brigade regions. The USMCR accessions share is consistently increasing throughout brigade regions as shown in Figure 8. The USNR accessions share is generally decreasing with essentially no change in the 5th Brigade region. ARNG accessions share is generally decreasing while remaining essentially constant in the 2d Brigade region.

Brigade/ Data Years	Constant			USAR Recruiters			ARNG Accessions			USNR Accessions			USMCR Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	1.253	0.152	+	0.398	0.000	-	0.073	0.253	+	0.068	0.406	+	0.205	0.225	68.4
1BDE/90-92	-	2.605	0.042	+	0.275	0.000	+	0.171	0.032	+	0.196	0.051	+	0.754	0.000	74.7
1BDE/93-95	-	2.720	0.012	+	0.261	0.000	+	0.147	0.020	+	0.411	0.000	+	0.243	0.066	74.7
2BDE/87-89	+	1.761	0.047	+	0.256	0.000	-	0.017	0.702	+	0.153	0.025	-	0.061	0.677	38.7
2BDE/90-92	+	1.982	0.065	+	0.234	0.000	-	0.063	0.300	+	0.050	0.552	+	0.116	0.593	29.5
2BDE/93-95	+	1.465	0.102	+	0.196	0.000	+	0.002	0.974	+	0.103	0.3343	+	0.079	0.631	25.1
3BDE/87-89	-	0.702	0.566	+	0.221	0.000	+	0.152	0.031	+	0.017	0.874	+	0.261	0.228	75.8
3BDE/90-92	-	2.949	0.055	+	0.245	0.000	+	0.232	0.013	+	0.175	0.111	+	0.392	0.087	72.8
3BDE/93-95	+	0.606	0.555	+	0.170	0.000	+	0.075	0.211	-	0.013	0.926	+	0.180	0.279	61.8
5BDE/87-89	+	0.339	0.770	+	0.094	0.012	+	0.223	0.031	+	0.284	0.001	+	0.655	0.003	55.3
5BDE/90-92	-	0.386	0.718	+	0.210	0.000	+	0.105	0.046	+	0.080	0.352	+	0.389	0.035	52.1
5BDE/93-95	+	1.751	0.054	+	0.172	0.000	+	0.033	0.555	+	0.062	0.488	-	0.014	0.913	36.7
6BDE/87-89	-	1.459	0.070	+	0.282	0.000	+	0.241	0.000	+	0.048	0.315	-	0.107	0.390	83.9
6BDE/90-92	-	1.547	0.137	+	0.315	0.000	+	0.224	0.000	-	0.013	0.841	-	.0004	0.972	83.6
6BDE/93-95	-	1.287	0.178	+	0.290	0.000	+	0.162	0.019	-	0.012	0.875	+	0.004	0.980	69.7

Table 13. Brigade and Era Models Using Other Active Services' NPS High Quality Male Accessions 21 and Younger to Predict USA Accessions

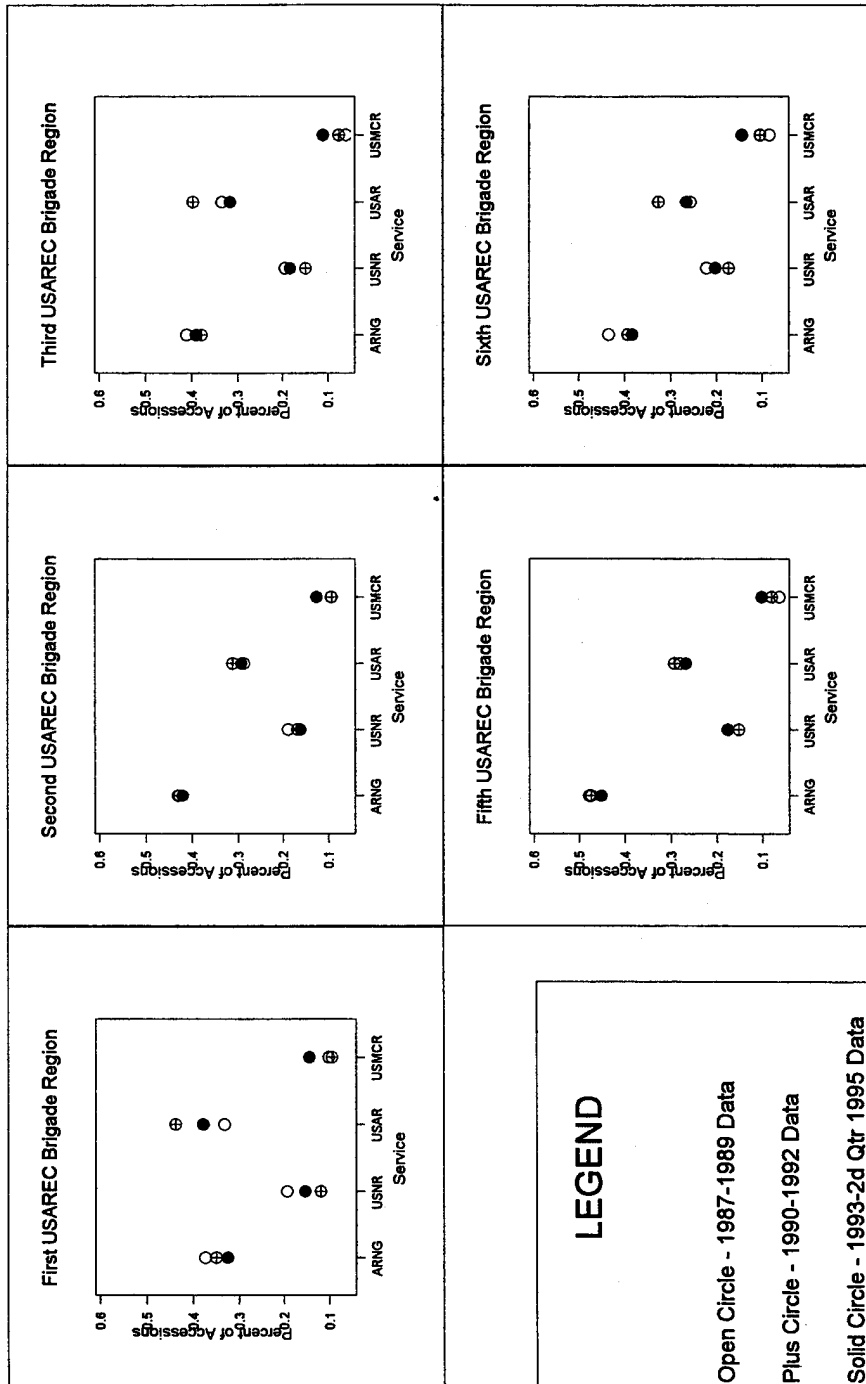


Figure 8. Reserves NPS High Quality Male Accessions by Brigade Region
Market Shares of 22 Year Olds and Younger Entering Reserves

IV. SUMMARY AND CONCLUSIONS

A. SUMMARY

1. Least Squares Regression

Analysis of the recruiting data at the USAREC brigade level revealed changing levels of competition between the Active Army and Army Reserve before, during and after Desert Storm eras. In nearly all cases, competition for non-prior service recruits is seen among the younger age group; accessions for those 21 years and younger. There was no significant evidence of competition in the 22 year old and older age group.

Active Army versus other active Services analysis indicated competition for the younger age group between the USA and USAF within the 6th Brigade region during the post Desert Storm era. During this same era, the USA and USAF competition is evident for young males in the 5th Brigade region.

Army Reserve versus other Reserves analysis revealed varying levels of competition over the historical eras. The post Desert Storm era revealed competition for the younger age group as a whole from the USNR in the 5th and 6th Brigade and from the USMCR in the 6th Brigade. During Desert Storm competition appears to be from USMCR in the 1st, 5th and 6th Brigade regions. Before Desert Storm competition from the USMCR appears only in the 1st Brigade region.

Active Army versus the Reserves revealed a mix of competition over the eras. Competition appears primarily from the USAR in all brigade regions and eras. The ARNG and USNR competition appears mainly in the before and during Desert Storm eras. The USMCR competition occurs during various eras and brigade regions, but occurs only in the post Desert Storm era in the 6th Brigade region.

2. Market Share Analysis

The distribution of high quality recruits among the Active Services and Reserves is changing over time. The changes noted are less than ten percent and are generally around five percent. For the Active Services, the Active Army share of high quality recruits has consistently decreased in every brigade and age group while the USMC proportion has consistently increased. For the Army Reserve, the changes in the share of high quality recruits of the age groups over the eras is mixed. Most notable trends appear to be decreases in the USNR's share and increases in USMCR's share of the high quality recruits. These changes in market share of high quality recruits possibly stems from a disproportionate downsizing of the USMC in contrast to the other Services over the past several years.

B. CONCLUSIONS

Accession Data provided by USMEPCOM allowed for an analysis of the numbers of accessions for the Military Services by USAREC brigade equivalent geographic areas and time. This data provided a means to obtain an indication of the competition experienced by the Active Army and Army Reserve with other Military Services. The analysis performed concentrated exclusively on the recruiting of high quality persons for three time periods during FY 1987 through 2d Quarter FY 1995. The time-frame was divided into three historic eras for analysis: pre-Desert Storm, Desert Storm and post Desert Storm. The data contained sufficiently accurate figures on Active Army and Army Reserve accessions to allow reasonable belief that the data represented a relatively accurate historical record of enlisted; primarily non prior service, accessions for the Active and Reserve Services, with exception of the Air National Guard and Air Force Reserve.

Most notable findings from the study of the regression models and market shares over time is that competition for recruits and market shares are changing over time. The most current analysis time-frame; FY 1993 - 2d quarter, FY 1995 is the most cogent to USAREC. Near term recruiting strategy and planning requires determining the most current recruiting situation. The findings are:

- Competition for high quality recruits appears to be limited to the 21 years old and younger age group. Younger people may be more easily swayed by the various Services' recruiting efforts than are older people.
- Active Army competition for Active Service high quality recruits is occurring in the 5th and 6th Brigades with the Air Force. Not surprisingly, there is a large concentration of Air Force Bases in those brigades in the Southwest and Western United States. The mere presence that brings familiarity with the Air Force may be a recruiting asset for that Service.
- Army Reserve competition for Reserve high quality recruits is occurring the 5th and 6th Brigades with the Marine Corps Reserve. Army recruiters interviewed in the 6th Brigade reported that the Marine Corps is seemingly very attractive to a large segment of the Hispanic population. The Southwest and Western United States contains a large portion of the Hispanic population. The Army Reserve competition with the Marine Corps Reserve for high quality recruits may be a manifestation of a cultural preference for a more "machismo" Service.
- Active Army competition for high quality recruits with the Reserves is primarily with the Army Reserve almost throughout the United States. Competition is not evidenced with the Army National Guard or the other Reserves, with the exception of the Marine Corps Reserve in the 6th Brigade. The Army Reserve may provide an opportunity for recruits to "try out" the Army through joining the Army Reserves.

- Market share of Active Army and Army Reserve high quality recruits is generally decreasing. The Marine Corps and Marine Corps Reserve market share is generally increasing. These changes in market share of high quality recruits possibly stems from a disproportionate downsizing of the Marine Corps less than the other Services over the past several years.

APPENDIX A. USMEPCOM DATA CODING AND AGGREGATION

The historical data provided by USMEPCOM includes all MEPS accessions recorded from 1987 to the second fiscal quarter 1995.

Each fiscal quarter was compiled by USMEPCOM into a single ASCII data file and contained aggregated accession data for all operating MEPS within USMEPCOM. This resulted in 34 files, one for each fiscal quarter for the entire USMEPCOM. Each data record was coded by a MEP station numerical identifier and Military Service. The record reported total numbers of recruiters and aggregations of categorical accessions for each Military Service.

<u>VARIABLE</u>	<u>VALUES</u>	<u>DEFINITION</u>
AFQT	HIGH	≥ 50th Percentile on AFQT
	LOW	< 50th Percentile on AFQT
AGE	YOUNG	≤ 21 Years Old
	OLD	≥ 22 Years Old
GENDER	MALE	
	FEMALE	
SERVICE EXPERIENCE	NPS	No Prior Military Service
SERVICE	PS	Prior Military Service
	USA	Active Army
	USAR	Army Reserve
	ARNG	Army National Guard
	USAF	US Air Force
	AFR	Air Force Reserve
	ANG	Air National Guard
	USN	Active Navy
	USNR	Naval Reserve
	USMC	US Marine Corps
	USMCR	US Marine Corps Reserve

Figure A-1. USMEPCOM Accession Aggregation Categories

The aggregation of the categories was performed by USMEPCOM. Each person processing through a MEPS generates a transaction record. Each transaction falling into the fiscal quarter of interest was queried for accession coding. Thus, querying each historical MEPS transaction for accession coding

resulted in an accession-only file. The records were further checked for valid fields for Service branch, AFQT score, gender, and age. Records with those fields invalid or missing were not included in the aggregations. Filtering for invalid fields eliminated about eight percent of the accession-coded records from the historical files. This process was performed for then capturing the accession and categorizing the accession.

USMEPCOM indirectly estimated an indicator variable for quantity of each services' recruiters for each MEPS during each quarter. This variable was generated by counting the number of unique recruiter identification fields associated with accessions during a quarter at a MEPS. This count provides an indicator of the volume of recruiters recruiting in the geographic region surrounding the MEPS.

**APPENDIX B. REGRESSION MODELS DATA, MARKET SHARE FIGURES
AND ANALYSIS**

Models of competition are regression models. The dependent variable is the number of accessions into a particular Service. Independent variables are used to predict the dependent variable values. The independent variables are the numbers of recruiters for the dependent variable Service as well as "competing" Services' number of accessions. A simple, linear relationship between the model elements is assumed to exist. The numbers of recruiters and accessions are "fitted" by a hyperplane using ordinary least square regression coefficients to produce a model of the relationship between the predictors and the actual accessions of the Service of interest. If the multipliers for the numbers of recruiters or other Services' accessions were negative and statistically significant, then this would indicate competition. The coefficients produced in the models are the regression coefficients as listed in the Tables in this Appendix.

The OLS regression model used in its general form is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \epsilon$$

where $\beta_0, \beta_1, \dots, \beta_k$ are regression coefficients to be estimated by the model. The Y term is the number of accessions into the Service of interest. The independent/predictor variables are $X_1, X_2, X_3, \dots, X_k$ and represent the numbers of recruiters and accessions into the competing Services. The values of the β_i terms are the unknown multipliers. The ϵ term is the error between the observed responses and true average responses. OLS regression provides the minimum of the sum of squares of the distances between the observed responses and those

predicted by the fitted model. The model fitted using the brigade data in its general form is written:

$$\hat{Y} = \hat{\beta}_0 + \hat{\beta}_1 X_1 + \hat{\beta}_2 X_2 + \dots + \hat{\beta}_k X_k.$$

The sum of squares of the deviations of the observed Y values from their corresponding predicted values is minimized. The appropriateness of each regression performed as a model is reflected in both predictor p-values and R² values.

In general, Military Services market shares of high quality accessions have varied over the period 1987 through 1995. The time period is broken into pre Desert Storm, Desert Storm and post Desert Storm eras; 1987-1989, 1990-1992 and 1993-2d fiscal quarter 1995. Total high quality accessions for the Active Services and for the Reserves are calculated for each USAREC brigade region and era. The USAREC brigade regions are those identified by USAREC as of February, 1995. Each Active Service share is calculated as the fraction of the total accessions acquired by the Active Service. Reserves shares are similarly calculated.

Table B-1 Analysis

Regression equations shown in Table B-1 for all eras have R^2 valued at least 75 percent with most values greater than 80 percent. The statistically significant coefficient values for all eras and brigades are positive for nearly all Services. The single exception is the negative coefficient of USAF accessions for 6th Brigade during the after Desert Storm era.

Brigade / Data Years	Constant			USA Recruiters			USN Accessions			USAF Accessions			USMC Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	16.679	0.042	+	0.150	0.232	+	0.480	0.000	+	0.932	0.000	+	0.401	0.028	77.4
1BDE/90-92	-	4.171	0.664	+	0.301	0.054	+	0.475	0.000	+	0.662	0.000	+	0.419	0.020	66.2
1BDE/93-95	-	33.110	0.002	+	0.831	0.000	+	0.173	0.024	+	0.476	0.000	+	0.457	0.000	64.9
2BDE/87-89	-	11.029	0.270	+	0.620	0.003	+	0.321	0.006	+	0.434	0.001	+	1.135	0.000	82.3
2BDE/90-92	-	22.030	0.051	+	1.045	0.000	+	0.479	0.000	-	0.288	0.100	+	1.201	0.000	75.6
2BDE/93-95	-	24.972	0.000	+	1.086	0.000	+	0.528	0.000	-	0.117	0.451	+	0.315	0.003	83.0
3BDE/87-89	-	30.680	0.038	-	0.011	0.953	+	0.238	0.143	+	0.821	0.000	+	1.541	0.000	85.9
3BDE/90-92	+	3.251	0.738	+	0.388	0.014	+	0.516	0.000	+	0.242	0.092	+	0.535	0.006	80.1
3BDE/93-95	-	16.232	0.076	+	0.533	0.000	+	0.120	0.223	+	0.317	0.030	+	0.725	0.000	76.0
5BDE/87-89	-	18.949	0.025	+	1.312	0.000	+	0.316	0.009	+	0.354	0.001	+	0.157	0.311	86.6
5BDE/90-92	-	14.248	0.096	+	1.139	0.000	+	0.361	0.000	-	0.026	0.859	+	0.447	0.014	80.0
5BDE/93-95	+	0.815	0.893	+	0.917	0.000	+	0.327	0.000	-	0.183	0.215	+	0.389	0.002	81.5
6BDE/87-89	-	10.661	0.064	+	0.684	0.000	+	0.116	0.293	+	0.999	0.000	+	0.379	0.051	91.7
6BDE/90-92	-	2.506	0.643	+	0.831	0.000	+	0.348	0.000	+	0.020	0.896	+	0.635	0.000	88.4
6BDE/93-95	+	9.558	0.057	+	0.980	0.000	+	0.120	0.195	-	0.275	0.039	+	0.488	0.000	87.0

Table B-1. Brigade and Era Models using Other Active Services' NPS, High Quality,
21 and Younger Accessions to Predict USA Accessions

Figure B-1 Analysis

The share of USA high quality accessions appears to be consistently decreasing throughout brigade regions. The USAF and USN accessions remained nearly constant as shown in Figure B-1. The USMC accessions are consistently increasing in all brigade regions.

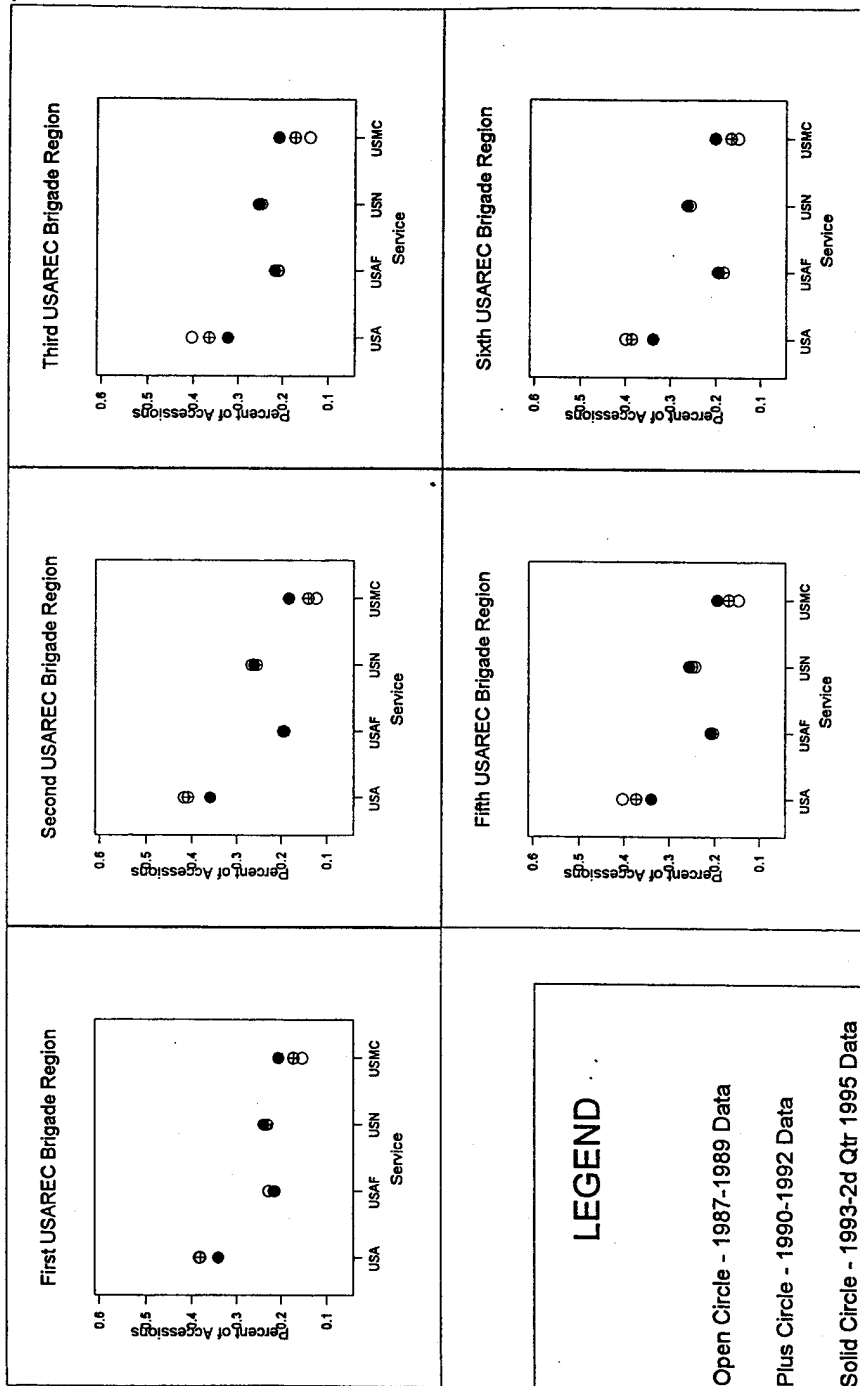


Figure B-1. Active Services All NPS High Quality Accessions by Brigade Region
Market Share of 21 Year Olds and Younger Entering Active Duty

Table B-2 Analysis

Regression equations shown in Table B-2 for all eras have R^2 valued at least 53 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are positive for all Services.

Brigade / Data Years	Constant			USA Recruiters			USN Accessions			USAF Accessions			USMC Accessions			R2
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	8.986	0.002	+	0.122	0.002	+	0.823	0.000	+	1.113	0.000	+	0.093	0.771	76.9
1BDE/90-92	-	11.870	0.000	+	0.369	0.000	+	0.035	0.776	+	0.284	0.043	+	1.744	0.000	70.7
1BDE/93-95	-	12.890	0.000	+	0.512	0.000	+	0.171	0.042	+	0.156	0.373	+	0.844	0.000	72.3
2BDE/87-89	+	4.500	0.235	+	0.106	0.009	+	0.772	0.000	+	0.796	0.000	+	0.131	0.701	61.2
2BDE/90-92	+	1.416	0.712	+	0.316	0.000	+	0.230	0.119	+	0.210	0.194	+	1.034	0.002	53.8
2BDE/93-95	-	8.498	0.026	+	0.299	0.000	+	0.226	0.164	+	1.029	0.000	+	0.564	0.077	64.7
3BDE/87-89	-	13.771	0.003	+	0.104	0.003	+	0.728	0.001	+	0.889	0.000	+	1.449	0.002	79.1
3BDE/90-92	+	2.488	0.432	+	0.200	0.000	-	0.035	0.973	+	0.257	0.135	+	1.456	0.000	65.6
3BDE/93-95	+	7.205	0.021	+	0.233	0.000	+	0.010	0.945	-	0.098	0.620	+	0.897	0.000	56.1
5BDE/87-89	-	6.532	0.166	+	0.034	0.468	+	1.763	0.000	+	0.456	0.005	-	0.319	0.351	73.3
5BDE/90-92	-	2.190	0.524	+	0.313	0.000	+	0.310	0.119	+	0.282	0.133	+	0.721	0.010	63.9
5BDE/93-95	-	2.499	0.333	+	0.240	0.000	+	0.264	0.044	+	0.703	0.000	+	0.744	0.003	77.7
6BDE/87-89	-	6.103	0.008	+	0.162	0.000	+	0.146	0.293	+	1.328	0.000	+	0.942	0.003	87.4
6BDE/90-92	-	3.748	0.117	+	0.386	0.000	-	0.301	0.021	+	0.344	0.081	+	1.056	0.000	80.3
6BDE/93-95	-	2.882	0.180	+	0.365	0.000	-	0.128	0.344	+	0.319	0.131	+	1.077	0.000	86.0

Table B-2. Brigade and Era Models using Other Active Services' NPS, High Quality,
22 and Older Accessions to Predict USA Accessions

Figure B-2 Analysis

The share of USA high quality accessions appears to be slightly decreasing in brigade regions with the exception of 6th Brigade region. That region showed increasing accessions share as shown in Figure B-2. The USAF and USN accessions shares are decreasing throughout the eras and brigade regions. The USMC accessions are consistently increasing in brigade regions.

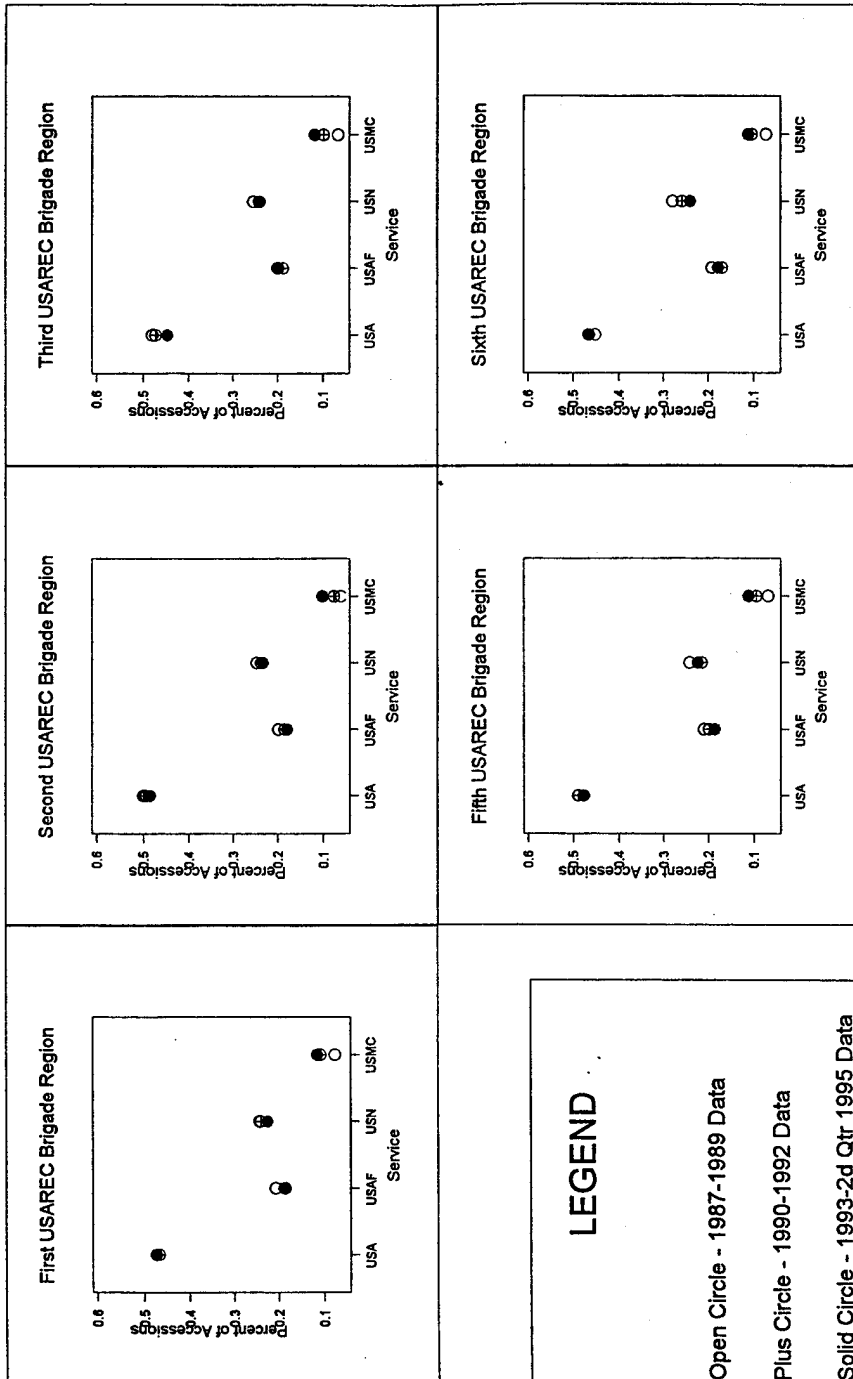


Figure B-2. Active Services All NPS High Quality Accessions by Brigade Region
Market Shares of 22 Year Olds and Older Entering Active Duty

Table B-3 Analysis

Regression equations shown in Table B-3 for all eras have R^2 valued at least 69 percent with most values greater than 80 percent. The statistically significant coefficient values for all eras and brigades are positive for all Services.

Brigade / Data Years	Constant			USA Recruiters			USN Accessions			USAF Accessions			USMC Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	21.985	0.018	+	0.757	0.000	+	0.251	0.024	+	0.916	0.000	+	0.244	0.222	80.0
1BDE/90-92	-	9.510	0.391	+	1.079	0.000	+	0.223	0.023	+	0.479	0.000	+	0.440	0.020	69.3
1BDE/93-95	-	27.97	0.008	+	1.561	0.000	+	0.088	0.132	+	0.203	0.067	+	0.425	0.000	79.0
2BDE/87-89	-	11.540	0.313	+	1.359	0.000	+	0.109	0.385	+	0.588	0.000	+	0.700	0.002	81.7
2BDE/90-92	-	24.660	0.053	+	1.788	0.000	+	0.259	0.013	-	0.210	0.185	+	1.017	0.000	76.2
2BDE/93-95	-	30.658	0.000	+	1.815	0.000	+	0.315	0.000	+	0.011	0.938	+	0.171	0.106	85.5
3BDE/87-89	-	34.01	0.051	+	0.591	0.018	-	0.055	0.768	+	0.861	0.000	+	1.418	0.000	86.4
3BDE/90-92	+	10.300	0.348	+	0.887	0.000	+	0.348	0.000	+	0.184	0.189	+	0.450	0.027	80.8
3BDE/93-95	-	8.410	0.350	+	0.993	0.000	+	0.076	0.368	+	0.292	0.025	+	0.515	0.000	81.7
5BDE/87-89	-	14.640	0.272	+	1.690	0.000	+	0.267	0.155	+	0.529	0.000	+	0.011	0.958	82.4
5BDE/90-92	-	11.021	0.260	+	1.819	0.000	+	0.189	0.053	-	0.018	0.897	+	0.310	0.099	82.3
5BDE/93-95	-	1.924	0.773	+	1.435	0.000	+	0.257	0.003	+	0.047	0.713	+	0.177	0.153	86.2
6BDE/87-89	-	9.332	0.157	+	1.109	0.000	-	0.139	0.215	+	1.234	0.000	+	0.278	0.161	93.1
6BDE/90-92	-	0.594	0.917	+	1.553	0.000	+	0.099	0.168	+	0.048	0.722	+	0.449	0.005	91.2
6BDE/93-95	+	6.472	0.205	+	1.614	0.000	-	0.006	0.947	-	0.065	0.578	+	0.294	0.024	92.0

Table B-3. Brigade and Era Models using Other Active Services' NPS, High Quality,
21 and Younger Accessions to Predict USA Accessions

Figure B-3 Analysis

The share of USA high quality accessions appears to be consistently decreasing in all brigade regions. The USAF and USN accessions remained nearly constant as shown in Figure B-3. The USMC accessions are consistently increasing in brigade regions.

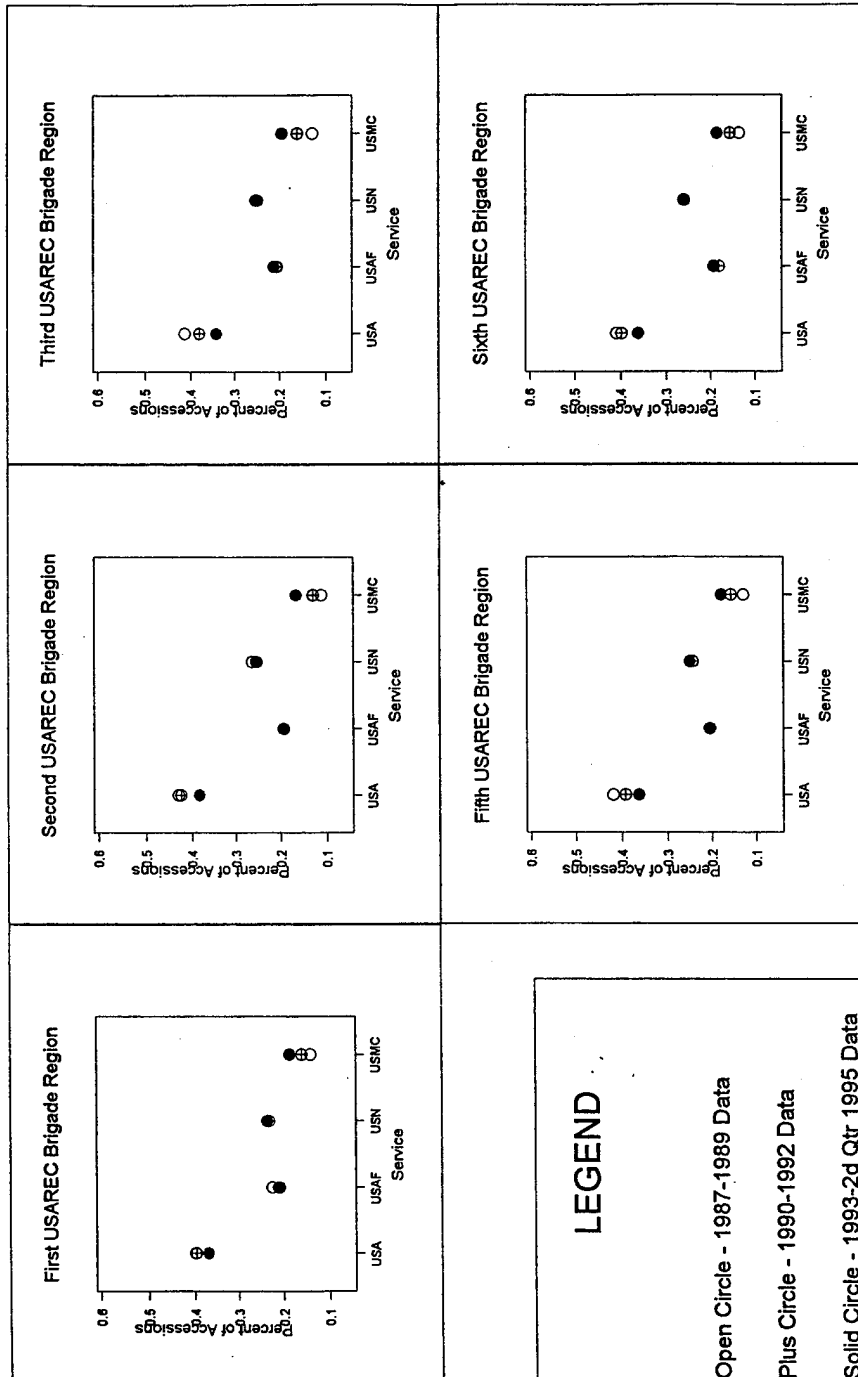


Figure B-3. Active Services All NPS High Quality Accessions by Brigade Region
Market Shares of All Ages Entering Active Duty

Table B-4 Analysis

Regression equations shown in Table B-4 for all eras have R^2 valued at least 44 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are positive for most Services. Significant negative coefficients are for the USMCR for all eras in the 1st Brigade region and for the 5th and 6th Brigade regions during the Desert Storm era. A significant, negative coefficient for the USNR accessions occurs in the 5th Brigade region and is borderline significant ($p=0.104$) in 6th Brigade region for the after Desert Storm era.

Brigade / Data Years	Constant			USAR Recruiters			ARNG Accessions			USNR Accessions			USMCR Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	0.816	0.877	+	1.065	0.000	+	0.474	0.000	+	0.379	0.000	-	0.454	0.002	44.6
1BDE/90-92	+	3.461	0.514	+	1.634	0.000	+	0.260	0.001	+	0.082	0.670	-	0.774	0.000	67.3
1BDE/93-95	-	1.413	0.760	+	1.853	0.000	+	0.208	0.003	+	0.099	0.512	-	0.433	0.043	72.8
2BDE/87-89	-	6.334	0.111	+	1.149	0.000	+	0.381	0.000	+	0.295	0.301	+	0.259	0.027	66.4
2BDE/90-92	-	6.936	0.021	+	1.336	0.000	+	0.354	0.000	+	0.103	0.201	+	0.016	0.888	73.5
2BDE/93-95	-	2.603	0.316	+	1.277	0.000	+	0.250	0.000	-	0.026	0.701	+	0.150	0.200	69.8
3BDE/87-89	+	6.110	0.446	+	1.094	0.000	+	0.260	0.000	+	0.168	0.169	+	0.166	0.328	64.8
3BDE/90-92	+	4.376	0.410	+	1.065	0.000	+	0.385	0.000	-	0.026	0.806	-	0.010	0.954	78.0
3BDE/93-95	-	5.164	0.353	+	1.407	0.000	+	0.303	0.000	+	0.120	0.449	-	0.079	0.691	76.6
5BDE/87-89	-	3.665	0.511	+	1.779	0.000	+	0.244	0.000	+	0.041	0.744	-	0.078	0.628	67.4
5BDE/90-92	-	10.072	0.006	+	1.440	0.000	+	0.341	0.000	+	0.326	0.003	-	0.196	0.075	78.7
5BDE/93-95	+	0.288	0.934	+	1.801	0.000	+	0.135	0.003	-	0.148	0.096	-	0.124	0.345	68.1
6BDE/87-89	-	0.341	0.888	+	1.115	0.000	+	0.247	0.000	+	0.074	0.143	+	0.022	0.667	80.1
6BDE/90-92	+	1.160	0.636	+	1.236	0.000	+	0.196	0.000	-	0.020	0.797	-	0.095	0.056	85.2
6BDE/93-95	-	2.946	0.110	+	1.188	0.000	+	0.307	0.000	-	0.068	0.104	-	0.010	0.860	83.2

Table B-4. Brigade and Era Models using Other Reserve Services' NPS, High Quality,
21 and Younger Accessions to Predict USA Accessions

Figure B-4 Analysis

The share of USAR high quality accessions appears to be decreasing in 2d and 5th Brigade regions, increasing in the 1st and 3d Brigade regions, and remaining nearly constant in the 6th Brigade region as shown in Figure B-4. The USMCR accessions share is primarily increasing throughout the brigade regions with exception of decreasing in the 1st Brigade region. The USNR accessions share is primarily decreasing with a slight increasing in the 5th Brigade region. ARNG accessions share is increasing in the 2d and 5th Brigade regions, decreasing in the 1st Brigade region while remaining essentially constant in both 1st and 3d Brigade regions.

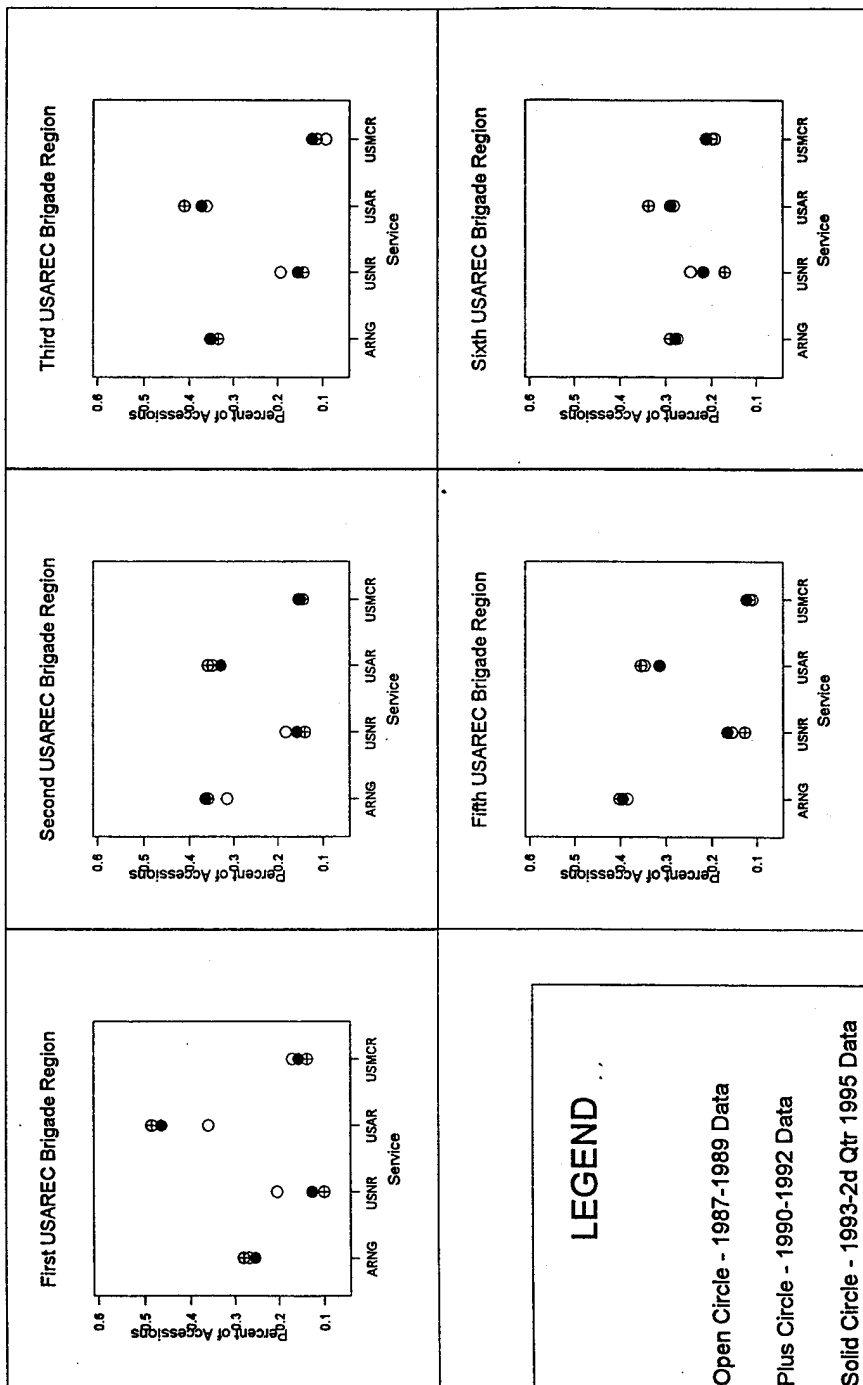


Figure B-4. Reserves All NPS High Quality Accessions by Brigade Region
Market Shares of 21 Year Olds and Younger Entering Reserves

Table B-5 Analysis

Regression equations shown in Table B-5 for all eras have R^2 valued as low as 28 percent with most values greater than 65 percent. The statistically significant coefficient values for all eras and brigades are positive for all Services.

Brigade / Data Years	Constant			USAR Recruiters			ARMG Accessions			USNR Accessions			USMCR Accessions			R2
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	3.604	0.001	+	0.370	0.000	+	0.047	0.523	+	0.251	0.011	+	0.191	0.361	72.4
1BDE/90-92	-	3.206	0.023	+	0.332	0.000	+	0.122	0.037	+	0.192	0.093	+	1.217	0.000	77.5
1BDE/93-95	-	4.175	0.002	+	0.326	0.000	+	0.113	0.122	+	0.415	0.002	+	0.507	0.003	75.9
2BDE/87-89	+	0.076	0.940	+	0.357	0.000	+	0.050	0.262	+	0.213	0.007	+	0.096	0.569	53.1
2BDE/90-92	+	2.240	0.078	+	0.300	0.000	-	0.052	0.380	+	0.028	0.778	+	0.214	0.401	33.1
2BDE/93-95	+	1.725	0.115	+	0.264	0.000	+	0.004	0.952	+	0.022	0.862	+	0.178	0.380	28.8
3BDE/87-89	-	0.678	0.620	+	0.254	0.000	+	0.134	0.076	+	0.138	0.257	+	0.176	0.467	77.7
3BDE/90-92	-	3.111	0.047	+	0.300	0.000	+	0.209	0.013	+	0.109	0.323	+	0.336	0.152	77.5
3BDE/93-95	+	1.148	0.315	+	0.220	0.000	+	0.028	0.658	-	0.207	0.139	+	0.412	0.031	67.1
5BDE/87-89	+	0.951	0.439	+	0.132	0.001	+	0.200	0.002	+	0.413	0.000	+	0.603	0.011	59.9
5BDE/90-92	-	0.205	0.858	+	0.275	0.000	+	0.099	0.058	-	0.089	0.335	+	0.654	0.002	58.9
5BDE/93-95	+	2.323	0.023	+	0.199	0.000	+	0.039	0.484	+	0.065	0.436	-	0.020	0.891	37.4
6BDE/87-89	-	1.579	0.063	+	0.329	0.000	+	0.225	0.000	+	0.054	0.291	-	0.095	0.470	86.0
6BDE/90-92	-	1.791	0.092	+	0.356	0.000	+	0.222	0.000	-	0.036	0.607	+	0.076	0.480	85.4
6BDE/93-95	-	0.975	0.329	+	0.322	0.000	+	0.126	0.069	+	0.005	0.952	+	0.072	0.632	72.5

Table B-5. Brigade and Era Models using Other Reserve Services' NPS, High Quality,
22 and Older Accessions to Predict USA Accessions

Figure B-5 Analysis

The share of USAR high quality accessions appears to be decreasing in 2d, 3d and 5th Brigade regions and increasing in the 1st and 6th Brigade regions. The USMCR accessions share is consistently increasing in all brigade regions as shown in Figure B-5. The USNR accessions share is mostly constant with increasing in 5th Brigade region and decreasing in the 1st Brigade region.

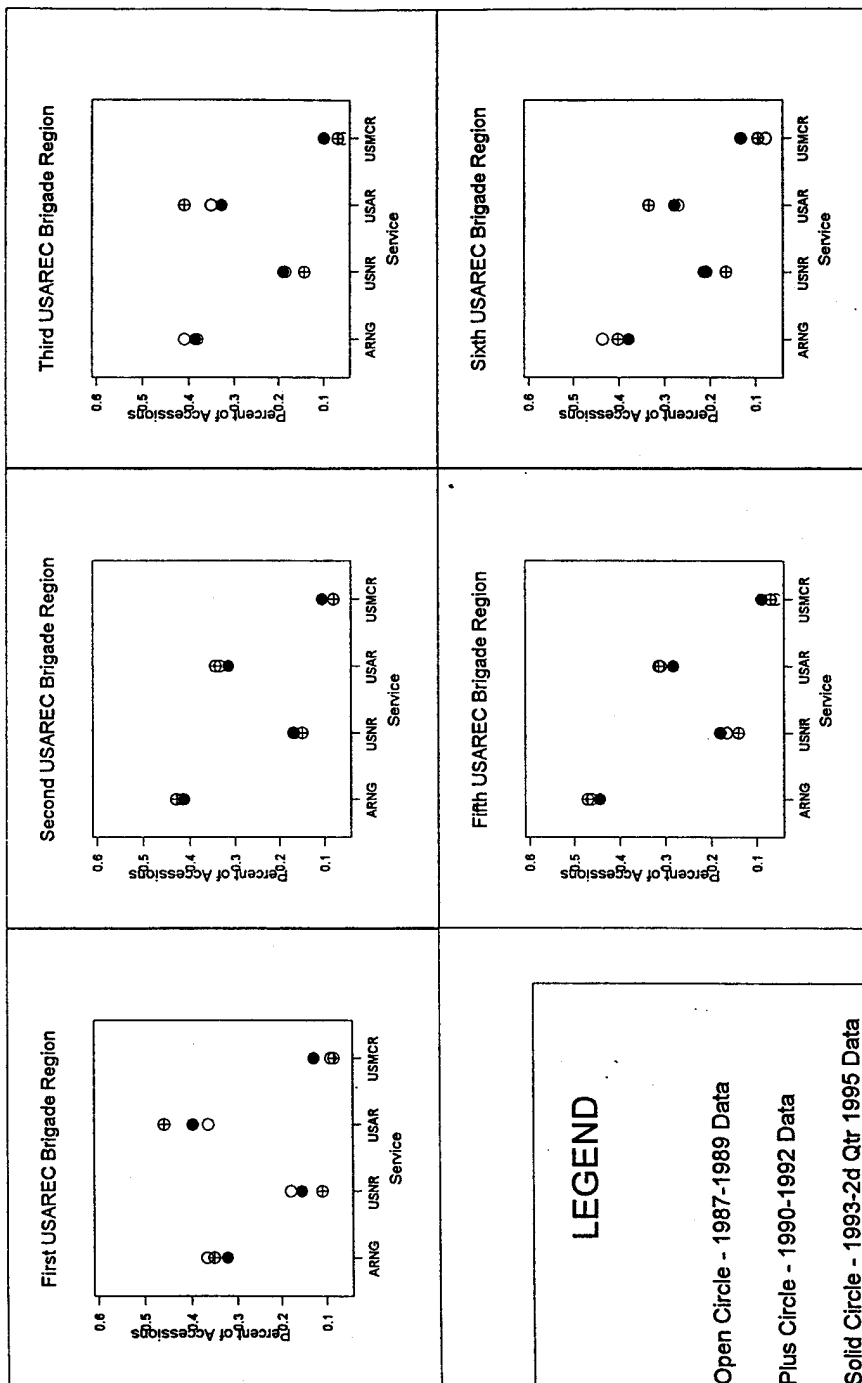


Figure B-5. Reserves NPS High Quality Accessions by Brigade Region
Market Shares of 22 Year Olds and Older Entering Reserves

Table B-6 Analysis

Regression equations shown in Table B-6 for all eras have R^2 valued at least 44 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are positive for most Services. Significant negative coefficients are for the USMCR for all eras in the 1st Brigade region for the Desert Storm and before Desert Storm eras.

Brigade / Data Years	Constant			USAR Recruiters			ARNG Accessions			USNR Accessions			USMCR Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	+	0.730	0.894	+	1.433	0.000	+	0.277	0.003	+	0.388	0.000	-	0.399	0.006	55.2
1BDE/90-92	+	4.193	0.423	+	1.996	0.000	+	0.158	0.011	+	0.074	0.616	-	0.497	0.002	75.3
1BDE/93-95	-	5.645	0.224	+	2.185	0.000	+	0.152	0.010	+	0.195	0.108	-	0.243	0.169	80.7
2BDE/87-89	-	6.082	0.140	+	1.377	0.000	+	0.331	0.000	+	0.351	0.000	+	0.221	0.051	70.2
2BDE/90-92	-	5.506	0.092	+	1.551	0.000	+	0.295	0.000	+	0.078	0.258	+	0.122	0.273	74.3
2BDE/93-95	-	0.340	0.904	+	1.570	0.000	+	0.169	0.000	-	0.007	0.915	+	0.159	0.162	70.6
3BDE/87-89	+	4.045	0.629	+	1.285	0.000	+	0.242	0.000	+	0.245	0.040	+	0.131	0.421	71.3
3BDE/90-92	+	1.693	0.765	+	1.381	0.000	+	0.349	0.000	-	0.011	0.900	-	0.007	0.965	82.6
3BDE/93-95	-	5.297	0.344	+	1.636	0.000	+	0.267	0.000	+	0.080	0.550	-	0.035	0.845	80.7
5BDE/87-89	-	6.081	0.308	+	1.777	0.000	+	0.238	0.000	+	0.215	0.057	+	0.096	0.536	71.3
5BDE/90-92	-	10.745	0.005	+	1.671	0.000	+	0.332	0.000	+	0.209	0.021	-	0.125	0.235	81.7
5BDE/93-95	-	0.152	0.965	+	2.059	0.000	+	0.125	0.002	-	0.114	0.138	-	0.093	0.433	74.0
6BDE/87-89	-	1.656	0.497	+	1.447	0.000	+	0.217	0.000	+	0.086	0.044	+	0.003	0.945	86.4
6BDE/90-92	-	0.008	0.997	+	1.577	0.000	+	0.201	0.000	-	0.059	0.327	-	0.407	0.304	89.8
6BDE/93-95	-	4.443	0.008	+	1.431	0.000	+	0.304	0.000	-	0.050	0.114	+	0.027	0.548	89.7

Table B-6. Brigade and Era Models using Other Reserve Services' NPS,
High Quality Accessions to Predict USA Accessions

Figure B-6 Analysis

The share of USAR high quality accessions appears to be decreasing in 2d and 5th Brigade regions, increasing in the 1st and 6th Brigade regions, and remaining nearly constant in the 3d Brigade region. The USMCR accessions share is primarily increasing with exception of remaining nearly constant in the 1st and 2d Brigade regions as shown in Figure B-6. The USNR accessions share is decreasing with exception of increasing in the 5th Brigade region. ARNG accessions share were increasing in the 2d Brigade region, decreasing in the 1st Brigade and 3d Brigade regions and remaining essentially constant in both 5th and 6th Brigade regions.

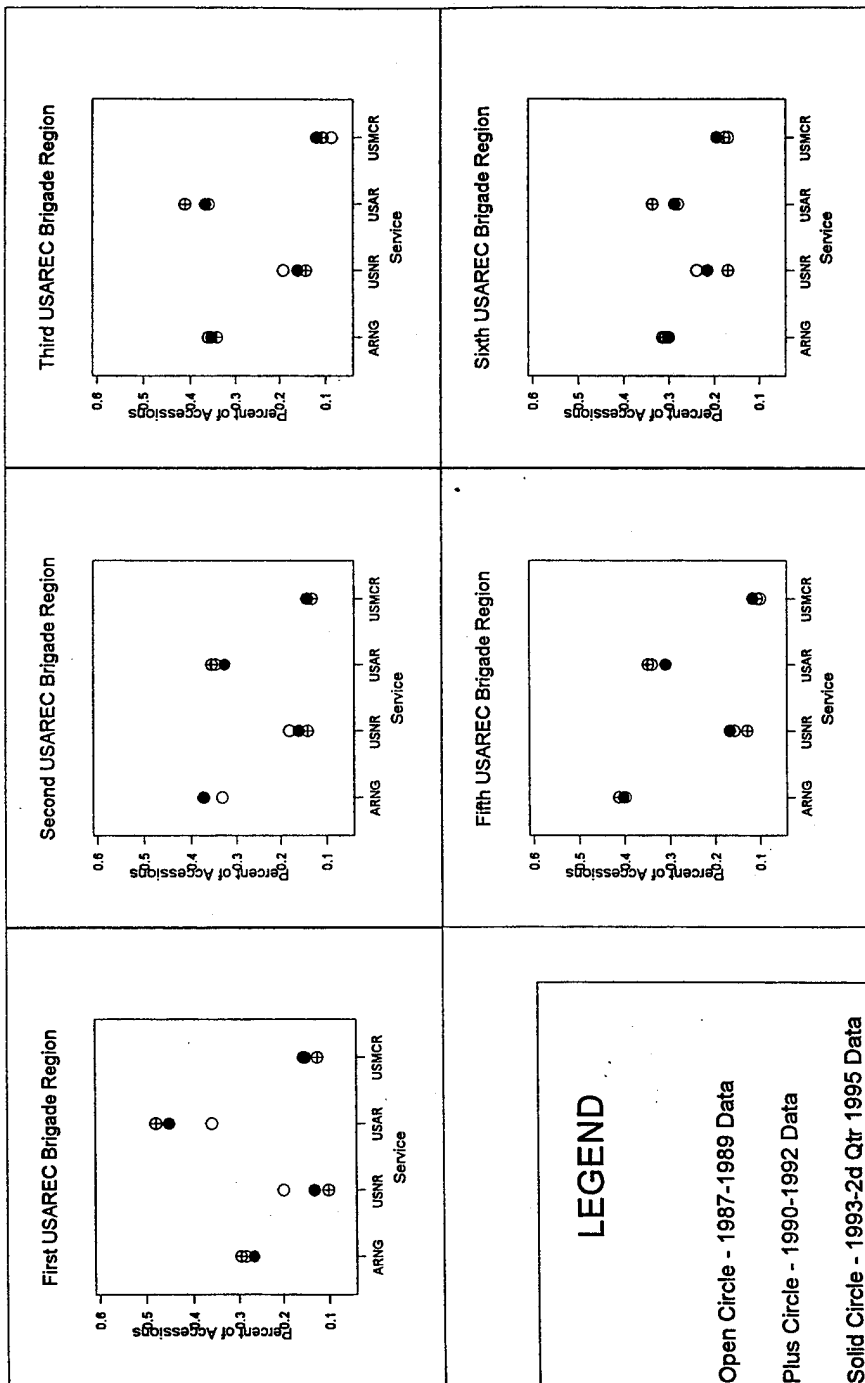


Figure B-6. Reserves All NPS High Quality Accessions by Brigade Region
Market Shares of All Ages Entering Reserves

Table B-7 Analysis

Regression equations shown in Table B-7 for all eras have R^2 valued as low as less than 10 percent with most values less than 50 percent. The statistically significant coefficient values for all eras and brigades are positive for the ARNG accessions.

Brigade / Data Years	Constant			USAR Recruiters			ARNG Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	0.831	0.212	+	0.204	0.000	+	0.147	0.003	56.3
1BDE/90-92	+	0.981	0.156	+	0.119	0.000	+	0.174	0.032	44.1
1BDE/93-95	-	0.500	0.326	+	0.138	0.000	+	0.019	0.787	58.6
2BDE/87-89	+	0.832	0.314	+	0.116	0.000	+	0.261	0.000	35.6
2BDE/90-92	+	1.436	0.051	+	0.079	0.001	+	0.137	0.021	10.1
2BDE/93-95	+	1.158	0.040	+	0.059	0.005	+	0.048	0.204	7.7
3BDE/87-89	-	0.525	0.523	+	0.134	0.000	+	0.156	0.006	55.5
3BDE/90-92	+	0.885	0.216	+	0.098	0.000	+	0.034	0.723	40.4
3BDE/93-95	+	0.909	0.090	+	0.058	0.000	+	0.083	0.232	26.9
5BDE/87-89	+	1.599	0.003	+	0.074	0.000	+	0.132	0.000	34.6
5BDE/90-92	+	1.470	0.001	+	0.045	0.000	+	0.118	0.009	18.7
5BDE/93-95	+	1.071	0.005	+	0.065	0.000	+	0.034	0.391	27.1
6BDE/87-89	-	0.021	0.948	+	0.190	0.000	+	0.068	0.026	77.1
6BDE/90-92	+	0.790	0.088	+	0.131	0.000	-	0.043	0.611	55.2
6BDE/93-95	+	0.698	0.078	+	0.096	0.000	-	0.035	0.666	44.5

Table B-7. Brigade and Era Models using ARNG PS, High Quality
22 and older Male Accessions to Predict USAR Accessions

Figure B-7 Analysis

The share of USAR high quality accessions appears to have been decreasing in 2d, 3d and 5th Brigade regions while increasing in the 1st and 6th Brigade regions as shown in Figure B-7.

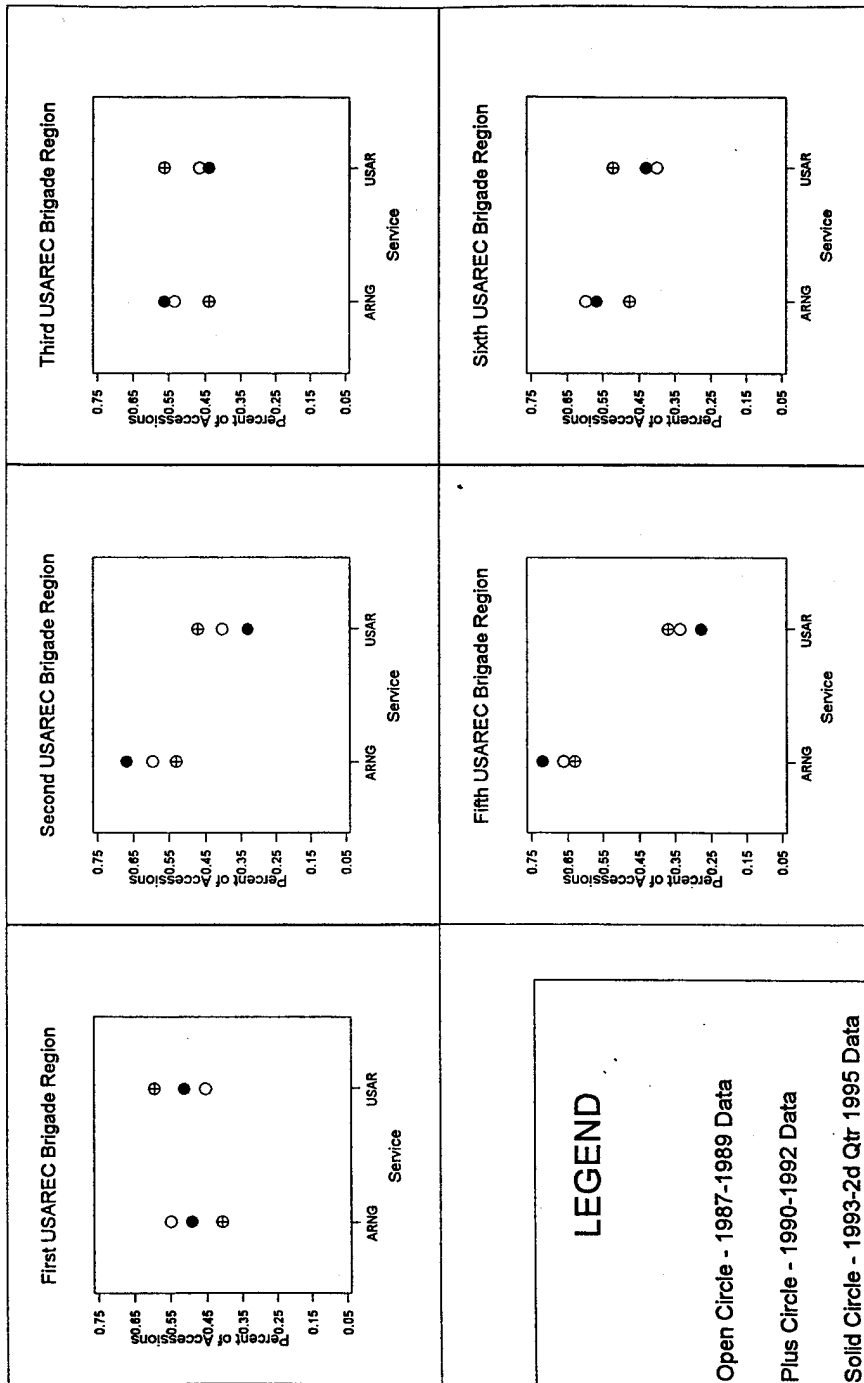


Figure B-7. Reserves PS High Quality Male Accessions by Brigade Region
Market Shares of 22 Year Olds and Older Entering Reserves

Table B-8 Analysis

Regression equations shown in Table B-8 for all eras have R^2 valued as low as 10 percent with most values less than 50 percent. The statistically significant coefficient values for all eras and brigades are positive for the ARNG.

Brigade / Data Years	Constant			USAR Recruiters			ARNG Accessions			R2 &
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	0.824	0.242	+	0.222	0.000	+	0.155	0.002	57.7
1BDE/90-92	+	0.825	0.247	+	0.131	0.000	+	0.204	0.010	47.9
1BDE/93-95	-	0.867	0.135	+	0.168	0.000	-	0.023	0.744	59.3
2BDE/87-89	+	0.838	0.336	+	0.131	0.000	+	0.267	0.000	35.1
2BDE/90-92	+	1.498	0.051	+	0.091	0.000	+	0.113	0.056	10.3
2BDE/93-95	+	0.648	0.261	+	0.091	0.000	+	0.042	0.240	14.9
3BDE/87-89	-	0.879	0.312	+	0.146	0.000	+	0.194	0.001	58.3
3BDE/90-92	+	0.927	0.213	+	0.105	0.000	+	0.040	0.667	40.8
3BDE/93-95	+	0.815	0.119	+	0.066	0.000	+	0.076	0.261	32.0
5BDE/87-89	+	1.686	0.003	+	0.088	0.000	+	0.124	0.000	36.3
5BDE/90-92	+	1.282	0.005	+	0.067	0.000	+	0.095	0.030	25.5
5BDE/93-95	+	0.640	0.094	+	0.082	0.000	+	0.004	0.916	35.7
6BDE/87-89	-	0.295	0.366	+	0.214	0.000	+	0.085	0.006	79.9
6BDE/90-92	+	0.890	0.084	+	0.159	0.000	-	0.147	0.103	58.5
6BDE/93-95	+	0.611	0.122	+	0.106	0.000	-	0.001	0.993	47.5

Table B-8. Brigade and Era Models using ARNG PS, High Quality
22 and older Accessions to Predict USAR Accessions

Figure B-8 Analysis

Figure B-8 shows that the share of USAR high quality accessions appears to have been decreasing in 2d, 3d and 5th Brigade regions and increasing in the 1st and 6th Brigade regions.

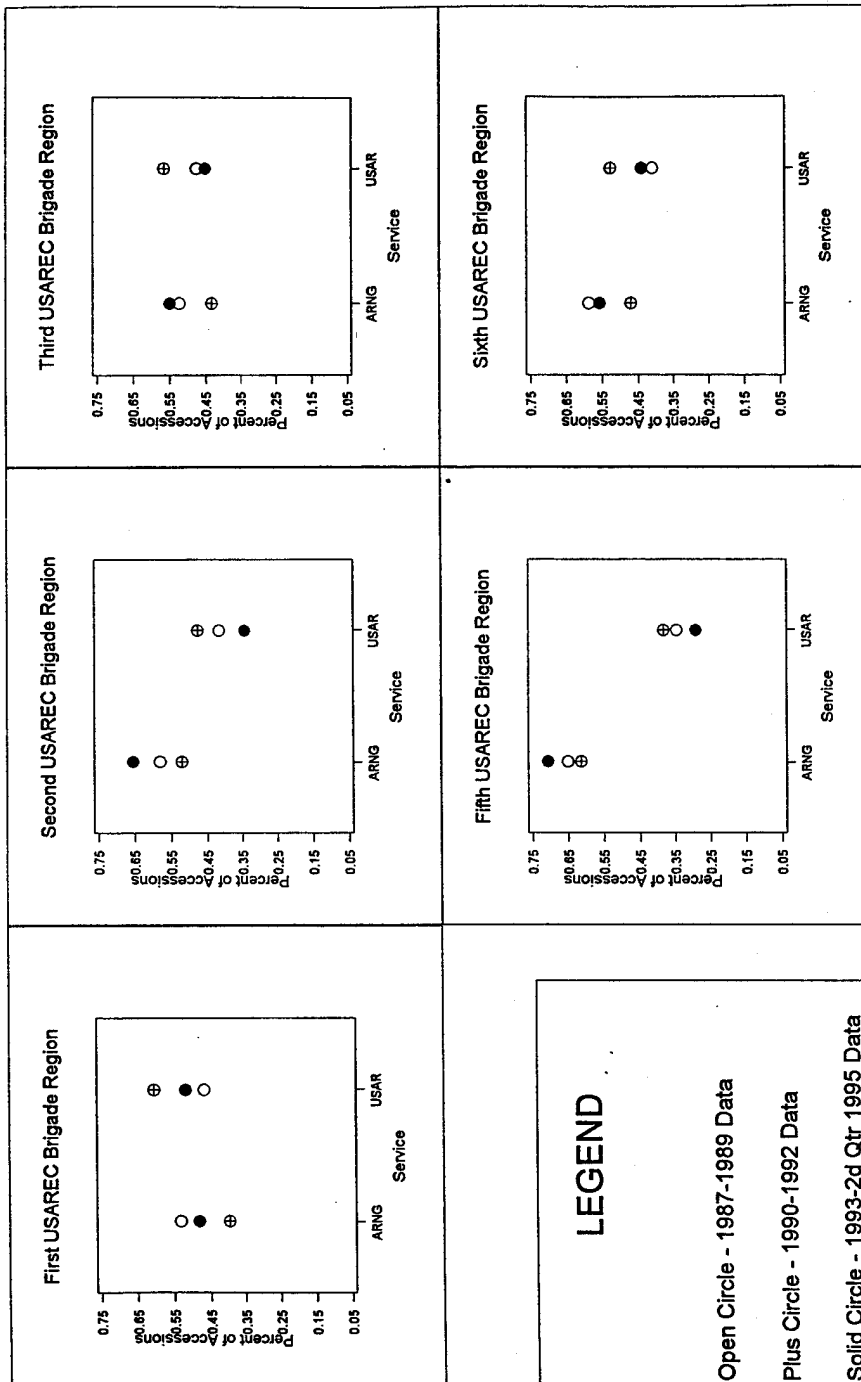


Figure B-8. Reserves PS High Quality Accessions by Brigade Region
Market Shares of 22 Year Olds and Older Entering Reserves

Table B-9 Analysis

Regression equations shown in Table B-9 for all eras have R^2 valued at least 46 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are mixed positive and negative values. The most frequent significant and negative coefficients appearing in the USAR accessions for most Brigades. The next most frequent significant and negative coefficients are in ARNG accessions during the before Desert Storm and Desert Storm eras for 2d, 3d and 5th Brigade regions. Next in frequency of significant negative coefficients are for the USNR during the Desert Storm era for 1st, 2d, 3d and 5th Brigade regions. Significant negative coefficients are for the USMCR during the Desert Storm era in the 1st, 2d, and 6th Brigade regions, in 1st Brigade region during the before Desert Storm era, and in the 6th Brigade region during the after Desert Storm era.

Brigade/ Data Years	Constant			USA Recruiters			USAR Accessions			ARMG Accessions			USNR Accessions			USNCR Accessions			R2
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	+	30.090	0.007	+	1.578	0.000	-	0.755	0.000	-	0.109	0.652	+	0.757	0.001	-	0.694	0.030	61.7
1BDE/90-92	+	27.014	0.004	+	1.763	0.000	-	0.194	0.032	+	0.122	0.379	-	1.610	0.000	-	0.838	0.015	53.8
1BDE/93-95	+	11.200	0.269	+	1.329	0.000	-	0.095	0.515	+	0.003	0.985	-	0.100	0.747	-	0.568	0.154	46.5
2BDE/87-89	-	18.010	0.074	+	2.024	0.000	-	0.781	0.000	-	0.236	0.061	+	0.649	0.007	+	0.570	0.064	76.5
2BDE/90-92	-	14.870	0.181	+	2.313	0.000	-	0.042	0.869	-	0.362	0.027	-	1.101	0.000	-	1.068	0.009	68.9
2BDE/93-95	-	20.485	0.022	+	1.527	0.000	-	1.054	0.003	+	0.364	0.031	+	0.254	0.373	+	0.435	0.361	67.6
3BDE/87-89	+	71.120	0.000	+	1.235	0.000	-	0.971	0.000	-	0.566	0.005	+	2.473	0.000	-	0.290	0.474	81.0
3BDE/90-92	+	44.750	0.001	+	1.466	0.000	-	0.026	0.916	-	0.556	0.005	-	0.626	0.028	-	0.036	0.931	67.0
3BDE/93-95	+	3.910	0.774	+	1.383	0.000	-	0.361	0.084	+	0.054	0.750	-	0.506	0.232	+	0.743	0.088	58.3
5BDE/87-89	+	3.269	0.689	+	1.675	0.000	-	0.248	0.020	-	0.139	0.072	+	0.374	0.042	+	0.670	0.003	85.8
5BDE/90-92	+	20.646	0.008	+	1.629	0.000	+	0.157	0.268	-	0.543	0.000	-	0.550	0.029	+	0.049	0.857	80.3
5BDE/93-95	+	8.033	0.247	+	1.184	0.000	-	0.3445	0.026	-	0.005	0.955	+	0.587	0.009	-	0.143	0.650	73.5
6BDE/87-89	+	7.076	0.390	+	1.665	0.000	-	1.314	0.000	+	0.609	0.001	+	0.459	0.016	+	0.014	0.938	88.6
6BDE/90-92	+	15.504	0.049	+	1.579	0.000	-	0.470	0.008	-	0.179	0.276	+	0.129	0.634	-	0.494	0.003	84.3
6BDE/93-95	+	5.294	0.450	+	1.302	0.000	-	0.461	0.084	+	0.245	0.305	+	0.100	0.608	-	0.532	0.012	82.6

Table B-9. Brigade and Era Models using Reserves' NPS, High Quality,
Male 21 and Younger Accessions to Predict USA Accessions

Table B-10 Analysis

Regression equations shown in Table B-10 for all eras have R^2 valued at least 46 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are almost exclusively positive. Significant negative coefficients seen occurring only in 3d Brigade region for USAR accessions during the least after Desert Storm era and for the 6th Brigade for the Desert Storm era.

Brigade/ Data Years	Constant			USA Recruiters			USAR Accessions			ARNG Accessions			USNR Accessions			USMCR Accessions			R2
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	6.359	0.087	+	0.284	0.000	+	0.520	0.114	-	0.346	0.202	+	2.511	0.000	-	0.341	0.611	65.3
1BDE/90-92	-	8.867	0.024	+	0.346	0.000	+	0.326	0.042	+	0.332	0.023	+	1.476	0.000	-	0.227	0.672	63.9
1BDE/93-95	-	8.134	0.036	+	0.419	0.000	+	0.598	0.015	+	0.495	0.010	+	0.606	0.088	-	0.225	0.569	71.7
2BDE/87-89	+	10.630	0.028	+	0.224	0.000	+	0.024	0.952	-	0.137	0.495	+	2.491	0.000	+	0.465	0.505	45.0
2BDE/90-92	-	0.785	0.866	+	0.308	0.000	+	0.860	0.008	+	0.135	0.493	+	2.052	0.000	-	0.900	0.241	58.0
2BDE/93-95	-	8.449	0.072	+	0.470	0.000	+	0.008	0.986	+	0.534	0.067	-	0.387	0.500	+	1.346	0.142	56.6
3BDE/87-89	+	1.894	0.735	+	0.202	0.000	-	0.832	0.030	-	0.042	0.899	+	4.905	0.000	-	1.177	0.244	78.3
3BDE/90-92	+	5.575	0.238	+	0.243	0.000	-	0.011	0.962	-	0.104	0.673	+	1.781	0.000	-	0.880	0.142	65.4
3BDE/93-95	-	2.621	0.626	+	0.287	0.000	-	0.586	0.138	+	0.825	0.001	+	0.973	0.098	-	0.147	0.825	42.2
5BDE/87-89	+	2.014	0.758	+	0.223	0.000	+	1.293	0.010	-	0.227	0.474	+	2.978	0.000	+	2.020	0.087	58.8
5BDE/90-92	-	1.526	0.732	+	0.304	0.000	+	0.034	0.929	+	0.270	0.209	+	2.233	0.000	+	0.412	0.580	63.6
5BDE/93-95	-	4.312	0.424	+	0.442	0.000	-	0.188	0.745	+	0.531	0.114	-	0.213	0.723	+	0.787	0.341	57.6
6BDE/87-89	-	3.345	0.552	+	0.242	0.000	+	0.908	0.100	+	0.161	.605	+	2.054	0.000	-	0.095	0.909	76.2
6BDE/90-92	-	6.376	0.092	+	0.323	0.000	+	0.610	0.029	+	0.252	0.244	+	0.911	0.000	-	0.683	0.054	80.6
6BDE/93-95	-	5.369	0.240	+	0.520	0.000	-	0.555	0.240	+	0.426	0.182	-	0.149	0.666	-	0.093	0.876	82.3

Table B-10. Brigade and Era Models using Reserves' NPS, High Quality,
Male 22 and Older Accessions to Predict USA Accessions

Table B-11 Analysis

Regression equations shown in Table B-11 for all eras have R^2 valued at least 51 percent with most values greater than 70 percent. The statistically significant coefficient values for all eras and brigades are mixed positive and negative values. The most frequent significant negative coefficients appear in the USAR accessions for most brigades. The next most frequent significant negative coefficients are for USNR accessions during the after Desert Storm and Desert Storm eras for 1st, 2d, 3d and 5th Brigade regions. Next in frequency of significant negative coefficients are for ARNG accessions during the Desert Storm era for 2d, 3d and 5th Brigade regions. Significant negative coefficients for the USMCR are seen during the Desert Storm era in the 1st, 2d, and 6th Brigade regions, in 1st Brigade region during the before Desert Storm and Desert Storm eras, and in the 6th Brigade region during the Desert Storm and after Desert Storm eras.

Brigade/ Data Years	Constant			USA Recruiters			USAR Accessions			ARNJ Accessions			USNR Accessions			USMCR Accessions			R2
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	+	29.230	0.017	+	1.801	0.000	-	0.735	0.000	-	0.063	0.792	+	0.812	0.001	-	0.708	0.039	63.2
1BDE/90-92	+	26.790	0.013	+	2.036	0.000	-	0.176	0.035	+	0.083	0.544	-	1.481	0.000	-	0.806	0.031	55.5
1BDE/93-95	+	10.630	0.343	+	1.611	0.000	-	0.160	0.225	-	0.034	0.804	-	0.187	0.527	-	0.315	0.458	51.7
2BDE/87-89	-	20.980	0.057	+	2.310	0.000	-	0.779	0.000	-	0.151	0.268	+	0.628	0.014	+	0.930	0.005	78.0
2BDE/90-92	-	26.990	0.043	+	2.859	0.000	+	0.101	0.660	-	0.432	0.018	-	1.191	0.001	-	1.300	0.006	69.7
2BDE/93-95	-	31.838	0.002	+	2.130	0.000	-	1.079	0.001	+	0.480	0.006	+	0.040	0.887	+	0.037	0.946	72.7
3BDE/87-89	+	80.350	0.000	+	1.471	0.000	-	0.771	0.001	-	0.571	0.005	+	2.315	0.000	-	0.422	0.353	80.2
3BDE/90-92	+	49.280	0.001	+	1.731	0.000	-	0.067	0.752	-	0.556	0.004	-	0.696	0.022	+	0.077	0.869	68.6
3BDE/93-95	+	6.910	0.639	+	1.618	0.000	-	0.247	0.154	+	0.004	0.978	-	0.706	0.084	+	0.922	0.046	62.3
5BDE/87-89	+	5.415	0.552	+	1.886	0.000	-	0.237	0.019	-	0.105	0.192	+	0.273	0.155	+	0.899	0.000	85.9
5BDE/90-92	+	23.447	0.008	+	1.886	0.000	+	0.133	0.319	-	0.567	0.000	-	0.579	0.029	+	0.236	0.446	80.8
5BDE/93-95	+	8.993	0.247	+	1.446	0.000	-	0.369	0.010	+	0.028	0.774	+	0.469	0.041	-	0.076	0.821	75.1
6BDE/87-89	+	6.860	0.469	+	1.860	0.000	-	1.136	0.000	+	0.695	0.000	+	0.446	0.026	+	0.060	0.767	88.2
6BDE/90-92	+	18.046	0.039	+	1.826	0.000	-	0.419	0.006	-	0.152	0.361	+	0.051	0.851	-	0.482	0.006	85.1
6BDE/93-95	+	10.419	0.161	+	1.531	0.000	-	0.420	0.070	+	0.152	0.494	+	0.054	0.751	-	0.557	0.010	85.2

Table B-11. Brigade and Era Models using Reserves' NPS, High Quality
21 and Younger Accessions to Predict USA Accessions

Table B-12 Analysis

Regression equations shown in Table B-12 for all eras have R^2 values of least 47 percent with most values greater than 60 percent. The statistically significant coefficient values for all eras and brigades are almost exclusively positive values. The only significant and negative coefficients appearing for the USAR accessions for 3d Brigade region during the before Desert Storm era and for the 6th Brigade region during the Desert Storm era.

Brigade/ Data Years	Constant			USA Recruiters			USAR Accessions			ARNG Accessions			USNR Accessions			USMCR Accessions			R2 %
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	-	5.977	0.158	+	0.256	0.000	+	0.840	0.009	-	0.329	0.253	+	2.583	0.000	-	0.143	0.848	67.4
1BDE/90-92	-	9.813	0.015	+	0.390	0.000	+	0.132	0.371	+	0.376	0.009	+	1.795	0.000	-	0.273	0.642	65.4
1BDE/93-95	-	10.469	0.016	+	0.469	0.000	+	0.584	0.007	+	0.487	0.013	+	0.656	0.075	-	0.266	0.566	72.6
2BDE/87-89	+	10.429	0.040	+	0.268	0.000	-	0.060	0.863	+	0.034	0.858	+	2.659	0.000	+	0.471	0.537	47.1
2BDE/90-92	-	0.810	0.875	+	0.383	0.000	+	0.314	0.273	+	0.007	0.968	+	2.226	0.000	-	0.562	0.510	54.9
2BDE/93-95	-	9.340	0.104	+	0.572	0.000	-	0.384	0.398	+	0.5573	0.063	-	0.410	0.546	+	1.404	0.211	52.6
3BDE/87-89	+	0.721	0.913	+	0.247	0.000	-	0.913	0.025	-	0.004	0.991	+	4.953	0.000	-	0.861	0.471	75.8
3BDE/90-92	+	3.452	0.488	+	0.302	0.000	-	0.245	0.275	-	0.085	0.714	+	1.960	0.000	-	0.885	0.166	66.0
3BDE/93-95	-	2.522	0.642	+	0.293	0.000	-	0.137	0.709	+	0.603	0.014	+	0.982	0.080	-	0.245	0.742	44.6
5BDE/87-89	+	2.796	0.675	+	0.249	0.000	+	1.257	0.009	-	0.291	0.342	+	3.037	0.000	+	2.170	0.071	61.1
5BDE/90-92	+	0.301	0.947	+	0.342	0.000	-	0.384	0.270	+	0.291	0.156	+	2.437	0.000	+	0.538	0.492	64.1
5BDE/93-95	-	2.054	0.717	+	0.507	0.000	-	0.770	0.154	+	0.604	0.055	-	0.129	0.807	+	0.656	0.444	59.4
6BDE/87-89	-	1.892	0.742	+	0.265	0.000	+	1.062	0.040	+	0.022	0.943	+	2.041	0.000	-	0.268	0.757	77.7
6BDE/90-92	-	6.949	0.069	+	0.357	0.000	+	0.411	0.124	+	0.302	0.159	+	0.977	0.000	-	0.809	0.034	80.4
6BDE/93-95	-	3.964	0.389	+	0.544	0.000	-	0.495	0.262	+	0.410	0.193	-	0.144	0.675	-	0.137	0.833	81.9

Table B-12. Brigade and Era Models using Reserves' NPS, High Quality
22 and Older Accessions to Predict USA Accessions

Table B-13 Analysis

Regression equations shown in Table B-13 for all eras have R^2 values of least 65 percent with most values greater than 75 percent. The statistically significant coefficient values for all eras and brigades are mixed positive and negative values. The most frequent significant and negative coefficients appear in both the USAR accessions and ARNG accessions. The USAR significant negative coefficients appearing primarily during the before Desert Storm era for the 1st, 2d, 3d, and 6th Brigade regions and during Desert Storm for the 1st Brigade region. The ARNG significant negative coefficients appearing during the before Desert Storm era for 3d and 5th Brigade regions and during the Desert Storm era for 2d and 5th Brigades. The next most frequent significant and negative coefficients are in USMCR accessions during the Desert Storm era for 1st, 2d, and 6th Brigade regions and during the after Desert Storm era for the 6th Brigade region. A single, significant negative coefficient appears during the Desert Storm era for the 2d Brigade region.

Brigade/ Data Years	Constant			USA Recruiters			USAR Accessions			ARNG Accessions			USNR Accessions			USMCR Accessions			R2
	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	±	COEF	PVAL	
1BDE/87-89	+	24.730	0.045	+	2.271	0.000	-	0.559	0.000	-	0.282	0.178	+	0.748	0.001	-	0.325	0.318	73.5
1BDE/90-92	+	10.000	0.366	+	2.620	0.000	-	0.140	0.074	+	0.163	0.147	-	0.544	0.042	-	1.067	0.002	55.8
1BDE/93-95	-	2.360	0.819	+	2.135	0.000	-	0.089	0.424	+	0.023	0.832	+	0.111	0.611	-	0.172	0.590	73.9
2BDE/87-89	-	8.700	0.469	+	2.563	0.000	-	0.408	0.036	-	0.202	0.119	+	0.681	0.006	+	0.841	0.012	79.0
2BDE/90-92	-	22.220	0.109	+	3.216	0.000	+	0.299	0.158	-	0.493	0.002	-	0.274	0.326	-	1.621	0.000	74.6
2BDE/93-95	-	39.078	0.000	+	2.424	0.000	-	0.311	0.204	+	0.362	0.007	+	0.107	0.644	+	0.023	0.962	83.1
3BDE/87-89	+	75.100	0.002	+	1.812	0.000	-	0.726	0.001	-	0.399	0.001	+	2.243	0.000	-	0.357	0.423	83.3
3BDE/90-92	+	53.910	0.000	+	2.062	0.000	-	0.108	0.545	-	0.440	0.006	-	0.225	0.342	-	0.262	0.495	77.5
3BDE/93-95	+	11.090	0.410	+	1.899	0.000	-	0.117	0.423	+	0.042	0.748	-	0.492	0.121	+	0.554	0.140	74.5
5BDE/87-89	+	11.890	0.336	+	2.004	0.000	+	0.127	0.336	-	0.236	0.020	+	0.452	0.039	+	1.837	0.000	84.5
5BDE/90-92	+	21.161	0.028	+	2.184	0.000	+	0.208	0.132	-	0.596	0.000	+	0.182	0.428	+	0.537	0.083	84.6
5BDE/93-95	+	3.182	0.686	+	1.930	0.000	-	0.162	0.234	+	0.036	0.684	+	0.258	0.206	+	0.017	0.958	83.9
6BDE/87-89	-	1.700	0.875	+	2.207	0.000	-	0.749	0.001	+	0.601	0.001	+	0.642	0.001	+	0.019	0.931	89.7
6BDE/90-92	+	11.826	0.114	+	2.298	0.000	-	0.334	0.006	-	0.094	0.432	+	0.199	0.283	-	0.546	0.000	91.6
6BDE/93-95	+	6.330	0.335	+	1.999	0.000	-	0.038	0.847	+	0.098	0.554	-	0.032	0.799	-	0.591	0.001	92.3

Table B-13. Brigade and Era Models using Reserves' NPS, High Quality Accessions
to Predict USA Accessions

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